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UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 648

OFFICE OF THE SECRETARY

Contribution from the Office of Farm Management
W. J. SPILLMAN, Chief

Washington, D. C. ▼ May 1, 1918

A FARM-MANAGEMENT SURVEY IN BROOKS COUNTY, GEORGIA

By

E. S. HASKELL, Assistant Agriculturist

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DESCRIPTION OF AREA SURVEYED.

Brooks County is located in the southern part of the coastal plain, just west of the center of the southern tier of counties in Georgia, about 50 miles from the Gulf of Mexico. The area covered by this survey is in the southern half of the county, bordering on the Florida State line. The location is shown by the shaded portion of the map, figure 1.[1]

This area was selected for study because here has been developed a diversified and profitable type of agriculture, with cotton retained as the chief single source of income. For years these farmers have developed the swine industry and the production on the farm of the products consumed in the home to a point that has been equaled in but few places in the South. It is believed that the type of farming found here embodies features that might with profit be adopted in many parts of the cotton belt. This is particularly true now that the recent rapid advance of the cotton-boll weevil into this section has forced many farmers to face the necessity of reorganizing their farms upon a basis involving less dependence than hitherto upon the

[1] For assistance in collecting the data upon which this study is based, acknowledgment is due to Messrs. M. A. Crosby, C. E. Hope, A. G. Smith, and F. D. Stevens, of the staff of the Office of Farm Management; to J. M. Purdom, Jr., temporarily employed by the Office of Farm Management; and to Messrs. S. H. Starr and E. C. Westbrook, of the faculty of the Georgia State College of Agriculture. Special acknowledgment is due Prof. Starr, who also assisted in tabulating the data.

single crop, cotton. At the time this survey was made (1914) the boll weevil had not invaded Georgia, but since then the entire southern part of the State has become infested. Of this, more will be said in another place.

The topography of the southern half of Brooks County is gently rolling to flat. Most of it has sufficient slope to provide good natural

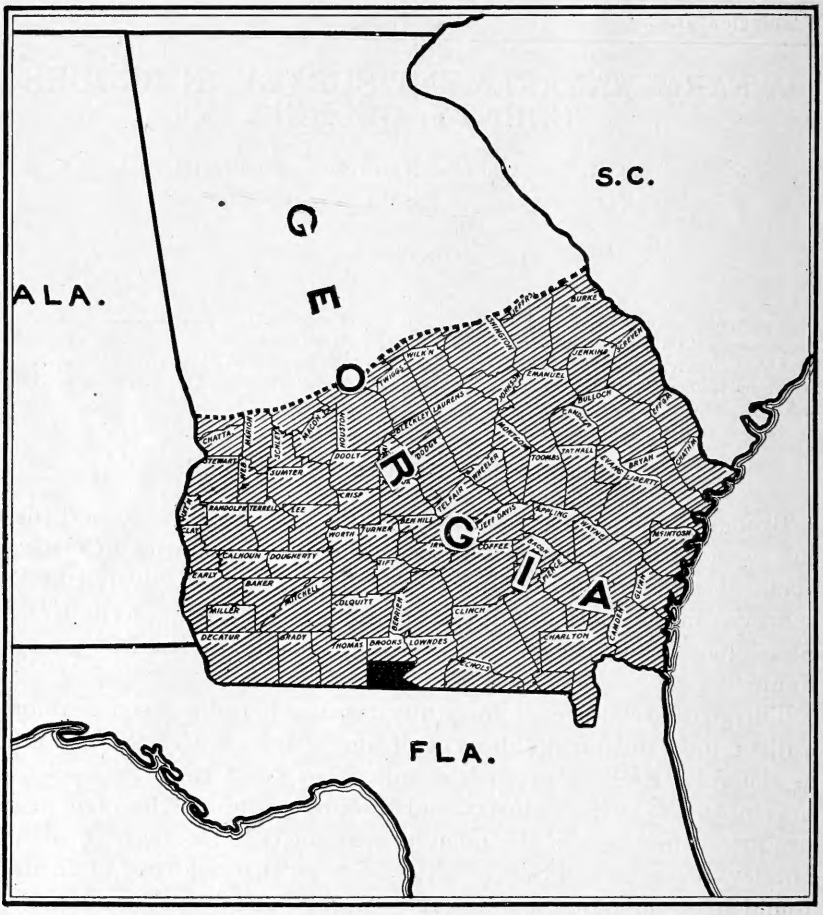

FIG. 1.—Map of Georgia, showing, in black, location of area surveyed. Shaded area indicates Coastal Plain section.

drainage, though considerable areas, particularly near the streams, are rendered swampy and of little value because of insufficient drainage.

The soil of this area is distinctly sandy, being mainly of the Norfolk sandy loam and closely related types. It is a gray sand, underlaid at a depth of from 10 to 40 inches or more by a yellow subsoil of a heavier texture. The soil is quite uniform over the area covered by this survey and is fairly representative of the soils over a consider-

able part of the coastal plain of this and the adjoining States. Farther north in the county the soils become gradually heavier, grading into the Ruston and Tifton series, but this survey has been confined to farms on the lighter soils found in the southern half of the county.

The climate of Brooks County is warm and equable. The winters are mild, and the summers, though long and warm, are tempered by Gulf breezes. Snow falls rarely, and temperatures lower than 30° F. seldom occur, though thin ice frequently forms during the winter months. Killing frosts may occur any time between November 15 and March 1. The annual precipitation amounts to 52 inches; the heaviest rainfall occurs during the months of June, July, and August. In figure 2 the average precipitation and that for the year 1914 are shown by months.

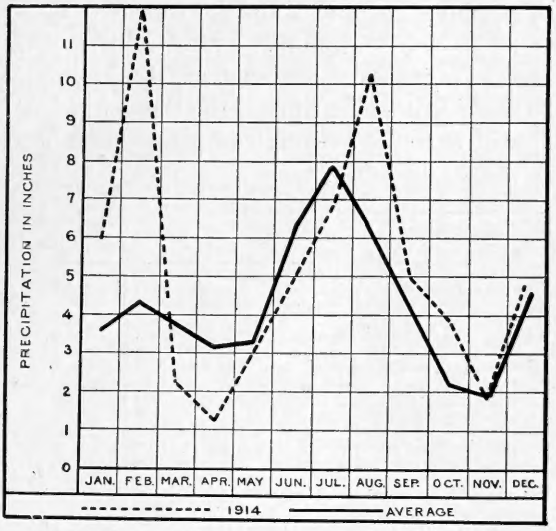

FIG. 2.—Precipitation by months at Quitman, Ga.

Quitman, the county seat, with a population of about 4,000, is just south of the center of the county and in the northern part of the area included in this survey. The Atlantic Coast Line Railroad crosses the county from east to west and the South Georgia Railroad from north to south, both passing through Quitman. These two railroads provide most of the area with good transportation facilities to outside markets, though some parts of the area, notably in the southwestern part of the county, are 8 to 10 miles or more from shipping points. The public roads of the county are of sandy clay, and the principal roads are being rapidly improved.

For years Brooks County has grown nearly all the live-stock feedstuffs consumed, together with a surplus to be sold in other markets. As a result, the local prices for such feeds are appreciably lower than those that prevail in the near-by counties which continue to purchase a part of their feeds from outside sources. Thus, in this county, the 1914 prices of corn and oats averaged about 75 cents and 50 cents per bushel, respectively, as compared with $1 and 75 cents throughout the greater part of the State.

Brooks County has long been noted for the amount and quality of pork produced, much of which has brought a substantial premium in the larger markets of this and adjoining States. Until recently, practically all the pork was killed and cured on the farms; but a packing plant is now in operation in an adjoining county, thus providing a ready market for live stock on the hoof.

Brooks County was organized in 1858. The pioneer settlers came to this section largely from the older parts of the State early in the last century, but it was not until the first railroad, the present Atlantic Coast Line, was built, just prior to 1860, that settlement was given an impetus. The older settlers came largely from northern Georgia, the Carolinas, and Virginia.

The direction and rate of the development of the agriculture of the county are shown by the census data presented in Table 1. In 1860, 15.3 per cent of the land area was classed as improved farm land, a percentage that increased through each succeeding decade to 36.9 per cent at the time of the last census. A large part of the county is still covered by longleaf pine and other timber.

TABLE I.—*Census data, Brooks County, Ga.*

Year	1860	1870	1880	1890	1900	1910
Number of farms [a]	300	394	930	1,176	1,823	2,646
Per cent of land in farms	81.1	65.8	83.9	74.6	87.6	85.8
Per cent of farm land improved	18.8	28.0	27.4	33.7	37.4	43.0
Per cent of land area in improved farm land	15.3	18.4	23.2	25.2	32.7	36.9
Acres per farm	890	550	297	209	158	106.6
Improved acres per farm	168	152	82	70	59	45.9
Value of farm land per acre	$4.05	$4.12	$3.79	$4.76	$4.65	$14.60
Value of farm property per farm	4,954.00	3,097.00	1,465.00	1,296.00	1,219.00	2,377.00
Per cent of farms operated by owners and managers	.....	.....	66.2	62 9.	50.3	41.5
Per cent of farms operated by cash tenants	.....	.....	14.4	15.7	35.9	26.6
Per cent of farms operated by share tenants [a]	.....	.....	19.4	21.4	13.8	31.9
Number of horses on farms	657	491	823	956	1,192	1,205
Number of mules on farms	856	777	958	1,225	1,776	2,875
Number of cattle on farms	14,797	8,196	13,032	11,319	11,170	14,178
Number of sheep on farms	3,113	4,921	4,596	1,946	961	610
Number of swine on farms	18,629	11,087	17,243	22,766	29,885	47,210
Number of swine per farm	62.1	28.3	18.5	19.4	16.4	17.8
Number of swine per 100 acres improved land	37.0	18.3	22.6	27.5	27.8	38.9
Cotton—acres	.....	.....	21,255	22,161	16,096	34,065
Cotton—bales	4,406	3,466	6,288	9,194	7,151	13,977
Corn—acres	.....	.....	23,027	26,157	38,428	40,121
Corn—bushels	223,353	171,190	173,530	270,978	384,220	546,760
Oats—acres	.....	.....	14,087	13,225	11,299	9,512
Oats—bushels	6,911	45,716	163,862	122,775	104,530	143,120
Rye—acres	.....	.....	161	111	116	279
Rye—bushels	1,914	1,738	879	565	500	1,900
Peanuts—acres	.....	.....	.....	6,884	10,307	14,775
Peanuts—bushels	.....	.....	.....	91,685	196,724	365,395

[a] It should be borne in mind that in the census returns croppers are treated as farm operators, though in reality they are wage hands receiving their wage in the form of a share of the crop. The numbers of actual farms are, therefore, considerably smaller than given in the table, and the average sizes of farms are correspondingly larger. Most of the farmers classed as "share tenants" are in reality croppers. There are but few share tenants, properly speaking, in Brooks County.

From the first, cotton and corn have been the crops of greatest importance. By 1900 the cotton acreage had declined, relatively, as compared with other crops, following a number of years of low cotton prices, but since that date cotton has been developed more rapidly than any of the other crops. The acreage of oats increased rapidly up to 1880, but since then it has steadily declined both in actual acreage and relatively. The plantings of rye have been increasing since 1880, but the total acreage is still small, this crop being used mainly for pasture purposes. The rapid increase in the planting of peanuts is noteworthy, the acreage having increased from 6,884 acres in 1880 to 14,775 in 1910. This increase has been coincident with and a result of the development of the swine industry. The peanut acreage in Brooks County was in 1910 considerably in excess of that of any other county in Georgia, and equal to nearly 10 per cent of the total for the State.

Of the different classes of live stock other than work stock, swine is the only one that has increased in importance. The number of sheep has declined rapidly since 1870, to an insignificant number, and the number of cattle was nearly the same at the time of the last census as it was in 1860. The number of hogs in the county declined somewhat from 1860 to 1870, but since then the number has constantly increased from 11,087 to 47,210 in 1910. Measured in terms of the number per 100 acres of improved farm land, the number of hogs declined from 37 to 18.3 during the decade between 1860 and 1870, but since that time the number has increased to 38.9 per 100 acres.

Since this survey was made the acreage of peanuts grown and the number of hogs produced have increased very rapidly. This has been due partly to the better market offered for hogs, but principally to the invasion of the boll weevil, which has greatly increased the hazard of cotton growing.

METHOD AND SCOPE OF INVESTIGATION.

In this study a record was obtained from each farmer of the amount and value of each class of farm property; the amounts, sources, and nature of all receipts and expenses; the amounts and values of each item contributed by the farm toward the family living; the amount of labor expended on each enterprise, and data on numerous other factors necessary in making a complete analysis of the farm business and calculating the cost of each productive enterprise. The methods and details of calculating costs will be discussed in another place.

A farm-management survey should represent conditions that are as nearly normal as possible if the results are to be useful and of wide application. This is particularly true of crop yields and mar-

ket conditions. Yields in Brooks County for the year covered by this study (1914) were approximately normal for all crops except cotton, which made yields somewhat above the average. This high yield would tend to a certain extent to present results bearing on the cotton crop in a too favorable light.

However, the market price of cotton during the year studied was low, owing to conditions growing out of the European war. The average 5-year price received by these 106 farmers was estimated by them to be 10.4 cents per pound of gross lint, whereas for the 1914 crop they received 7.1 cents, or about 32 per cent below normal. Undoubtedly this estimated 5-year price of cotton was conservative, a fact which would tend to counterbalance the effect of the rather

FIG. 3.—Woodland constitutes approximately half of the farm area. The prevailing timber is the long leaf pine, which is rapidly being turpentined.

large yield. To correct the effect of this abnormality, the average price received by each farmer for cotton during the preceding 5-year period was substituted for the 1914 price in figuring the returns from the farm.

The price of watermelons fell during the shipping season to a low figure, with the result that many of the farmers, particularly those who had a late crop, received a very low price for a part of the crop, and many melons which otherwise would have been marketable were not even harvested. The average price received for the melons sold from farms studied was $52.11 per carload, whereas the estimated average 5-year price amounted to $57.80. In every case where the price received was abnormal, the farmer's estimated 5-year average price was substituted.

Market conditions were normal for all crops sold except cotton and melons, and it is believed that with these substitutions men-

tioned the results of this survey represent a close approximation to average conditions. It is true, however, that the cattle market was somewhat low, but this affected appreciably the income from only three of the farms. Also the price of hogs was slightly depressed, but not sufficiently so to warrant substitutions.

Numerous losses from hog cholera occurred throughout the county, and on a few of the farms studied such losses were serious, but taken together these losses represented approximately the average losses from that source during the preceding years.

TYPE OF FARMING.

Table II shows how the farm area is divided. The 106 farms surveyed average in size 331 acres, of which less than half, or 145 acres, are devoted to planted crops. Scarcely any idle crop land

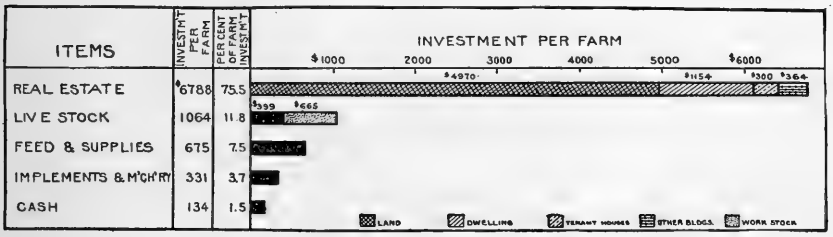

FIG. 4.—Distribution of farm investment.

is found, and less than 2 acres per farm of pasture in rotation. Permanent pasture, other than woods pastured, includes less than 8 acres per farm, slightly more than half of which is tillable. The remaining farm area (see fig. 3), or 53.3 per cent of the total acreage, consists of woods and waste land. About one-fifth of the woods and waste land, or 11.4 per cent of the total farm area, either can not be brought under cultivation at all, or not without a large outlay, since it consists of roads, ponds, and swampy areas near the streams. A like area of the woodland is fenced and utilized as pasture, leaving exactly one-fifth of the farm area in woodland that could be cleared but is actually used only as a source of wood, lumber, and turpentine, and as a public range. The woodland, if fenced, furnishes a low-grade pasture which serves mainly to tide the live stock over the late winter, spring, and early summer period when the crop area as now organized does not provide sufficient pasturage. The unfenced woodland serves a like purpose, it being a common practice to allow cattle and hogs to graze the public roads and range. The woodland is covered for the most part with longleaf pine, some of which is being turpentined preparatory to lumbering and clearing, while more is held as a source of firewood and future lumber supply. Several turpentine stills and sawmills are in operation in the county.

TABLE II.—*Distribution of farm area (106 farms, Brooks County, Ga.).*

Total acres per farm.	Acres of crop land per farm.	Per cent of farm area in—					
		Crop land.	Woods pastured.	Other pasture.	Woods not pastured.	Waste, swamp, etc.	Total woods and waste.
331	145	43.9	11.4	2.8	30.5	11.4	53.3

DISTRIBUTION OF CAPITAL.

The average capital per farm and the manner in which that capital is distributed among its different elements are shown in figure 4. Three-fourths of the average farm capital consists of real estate, leaving one-fourth as working capital; and nearly three-fourths of

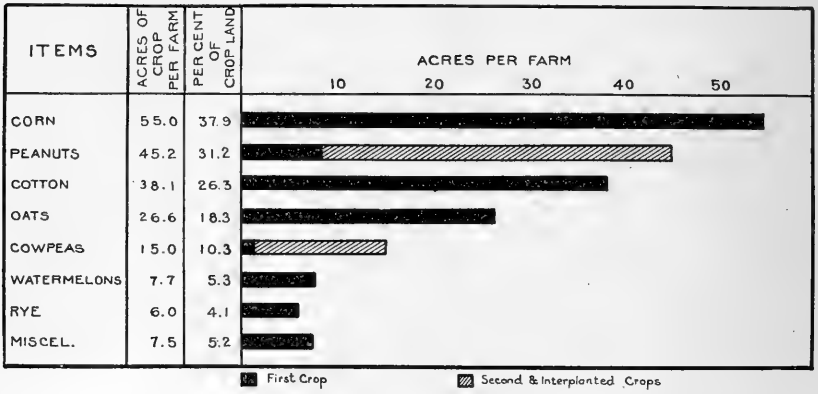

FIG. 5.—Acres of crops per farm.

the real estate value consists of land ($4,970). The average dwelling is worth $1,154, and the average values per farm of the tenants' houses and other buildings equal $300 and $364, respectively. Nearly half of the remaining investment consists of live stock, and more than 60 per cent of this is work stock. For every acre of land in crops, these farms had $7.34 invested in live stock, $4.66 in feeds and supplies, and $2.28 in implements and machinery.

The average market price of the land of these farms was found to be $20.50 per acre, while the crop land alone was valued at $30.30 per acre and would rent for $3.09. Thus the renting value amounts to approximately 10 per cent of the market value of the crop land. But it should be borne in mind that this rent is based on the land in its present state of fertility, which has been built up by the extensive growing and pasturing off of such crops as peanuts. If cropped for several successive seasons with cotton, this light, sandy soil would then rent for much less. A large part of the woodland other than waste is valued at but little less than the crop land, since it carries

merchantable timber that would pay for bringing the land into cultivation. Its value is included in the investment of the farm. While most of it gives but little or no direct return, and since it represents so large a proportion of the area, the inclusion of its value in the capital gives the farm a lower per cent return on the investment and a lower labor income than it otherwise would show.

CROPS.

The relative acreages of the principal crops grown on these farms are shown in figure 5. Corn represents the largest acreage, occupying 37.9 per cent of the whole crop area, while peanuts follow, with 31.2

FIG. 6.—Corn and peanuts are commonly planted in alternate rows. This is a sound practice (see page 54).

per cent; cotton comes third with 26.3 per cent; and oats fourth with 18.3 per cent. However, more than four-fifths of the acreage planted in peanuts consists of peanuts planted in corn, and hence is to that extent a duplication of the area reported in corn. Throughout this bulletin peanuts planted in corn are thus treated as a second crop. (See fig. 6.)

That cotton occupies a more important place on these farms than its relative acreage would indicate will be shown by a later table. Cowpeas for hay occupy fifth place in point of acreage, though this is nearly all a second crop, being planted after oats, rye, or watermelons. Watermelons come next with 5.3 per cent of the crop area, followed in importance by rye with 4.1 per cent. More than one-third of the rye acreage is grown wholly for grazing and as a winter cover crop, while other rye and much of the oats also furnish spring and winter pasture in addition to the grain harvested. The miscellaneous crops include sweet potatoes, sugar cane for sirup, sorghum, velvet beans, Irish potatoes, cucumbers, chufas, millet, and a few others. These miscellaneous crops occupy relatively unimportant

acreages. However, they have an important place in the economy of the farm.

LIVE STOCK.

Brooks County has long been known for its live stock, particularly swine. The relative numbers of animal units[1] of the different classes of live stock found are shown in figure 7. Cattle constitute slightly more than half of the animal units, excluding work stock, while hogs make up more than nine-tenths of the remainder. Most of the farms keep a sufficient number of milk cows and poultry to supply the family needs, and in many cases a small surplus for sale on the local market; but on none of the farms is dairying or poultry raising otherwise important, owing to the limited local market for such products. A number of farms in the county make a practice of feeding cattle, securing some of the feeders from the other farms in this and in adjoining counties, and shipping others in from Florida. Three such farms are included in this survey.

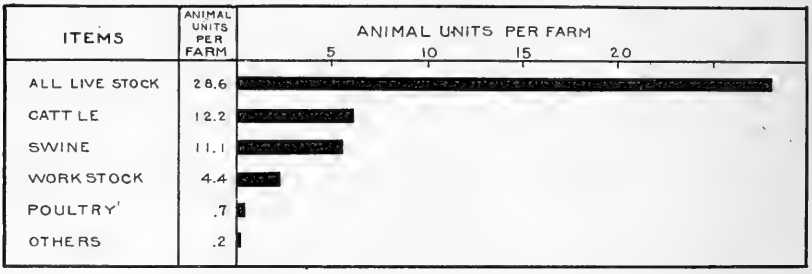

FIG. 7.—Number of animal units per farm of different classes of live stock.

On a very few farms colts are grown, but nearly all the work stock is shipped in from other States. Bees are kept on a number of farms, but on only 4 farms studied were they an important source of income. One farm kept sheep and several supported a few goats.

The number of animal units of cattle carried slightly exceeds those of hogs, but the latter in reality occupy much the more important place in the business of these farms, as is brought out in Table III.

TABLE III.—*Average value per animal unit of receipts from cattle, hogs, and poultry (106 farms, Brooks County, Ga.). Receipts include sales, increased inventories, and products consumed in the farm home.*

Item.	Cattle.	Hogs.	Poultry.
Sales and increased inventory, per animal unit	$9.68	$37.60	$42.25
Value of products consumed on farm, per animal unit	9.73	11.80	65.35
Total credits per animal unit	19.41	49.40	107.60
Total credits per hog unit[a]		9.88	

[a] The equivalent of a 200-pound hog.

It will be seen that hogs gave returns amounting to two and a half times as much per animal unit as did the cattle, or $49.40 as com-

[1] An animal unit is a mature cow or horse, or as many other animals as consume an equivalent amount of feed. Two colts or young stock, 5 hogs, 10 pigs, 7 sheep, or 100 poultry constitute this unit.

pared with $19.41. Nearly half of the receipts from cattle consisted of dairy products sold and consumed in the home, the balance being mostly cattle sold on the hoof. The low receipts per animal unit from cattle are due to the low grade of most of the native stock kept, and to the presence of the cattle tick in the county when these records were taken. A strong effort is being made to eradicate the tick and to improve the breed of cattle kept. The hogs grown are mostly grade stock of fair to good quality.

SOURCES OF INCOME.

One means of measuring the importance of the different farm enterprises is by the receipts from each in the form of sales and increases in inventories. Figure 8 shows graphically the sources of farm receipts and the relative importance of each, measured by this standard. It is seen that cotton is by far the most important single source of income, furnishing half of all the farm receipts,[1] that term

[1] DEFINITIONS.—The terms defined below will be used frequently throughout this bulletin.

Farm receipts include all sales from the farm and increase of inventories of live stock, feeds, supplies.

Farm expenses include all current cash expenditures, the value of farm labor performed by the family (except the operator), depreciation on buildings and equipment, and decreases in inventories of live stock and feed and supplies.

Gross farm income is the sum of all farm sales, plus any increases in inventories. The *net farm income* is the difference between this sum and the sum of all farm expenses. For convenience, the term *farm income* is used to designate the net farm income.

Labor income is the sum that the operator has left for his own labor and management after deducting from the farm income the interest on his investment figured at the current rate on well-secured farm loans. In this study 8 per cent interest is the rate used. Frequently prices of land are influenced by factors other than the present earning power for farming purposes. In such cases it is better, when calculating labor income, to use the interest on the working capital plus the net rent from the real estate instead of the interest on the investment. In this study these two methods of calculation gave essentially the same result, hence the simpler one was used.

Farmer's earnings represent the sum of the labor income plus what the farm furnishes toward the living of the operator and all others living or boarding in the farm home.

Farm-management surveys have shown that the farm returns are largely dependent upon size of the business. For many purposes it is desirable that the factor of size be eliminated in order that farms of different sizes may be grouped together and compared. For this purpose the *index of earnings* is used herein. This factor is determined as follows: All farms of similar size are grouped together and the average farmer's earnings for each group is computed. The farmer's earnings of each farm in a given group is then compared with the average for that group, the group average being expressed as 100. Therefore, the index of earnings is the farmer's earnings expressed as a percentage of the farmer's earnings for all farms of a similar size. For example, if a farm shows an index of earnings of 110, it means that the farm in question returned farmer's earnings 10 per cent larger than did the average farm of a similar size.

The *per cent return on investment* is computed by deducting the value of the farmer's labor from the net farm income and dividing the remainder by the total capital invested. This figure expresses the profits of the business as that term is ordinarily used in the business world, and is nearly independent of the size of the farm. Obviously, this factor would have little value in comparing tenants with owner farms, but in this study all farms have been reduced to the same tenure, namely, that of owners who operate their own farms.

The per cent return on investment eliminates the factor of size even more completely than does the index of earnings. These two terms express the profits of the business from different points of view, one ascribing the profits to capital and the other to the operator's labor and management. Both having been found very useful in this study, and are the ones used throughout as the principal measures of farm efficiency.

as here used not including products consumed on the farm. Hogs furnish the next largest returns, with 15.7 per cent of the total receipts, followed by oats and rye taken together, watermelons, corn, and cattle, these ranging in order from 6.1 per cent to 4.4 per cent of all receipts. But when the value of the products consumed in the farm home is added to the sales, the order is changed, hogs taking second place followed by cattle, corn, miscellaneous crops, oats and rye, and watermelons. The miscellaneous crops include in order of importance sweet potatoes, peanuts, Irish potatoes, cabbage, etc. Other and less important sources of receipts or increases of inventories of feed and supplies are poultry and eggs, sugar-cane sirup (see fig. 9), cowpea hay, receipts from miscellaneous sources, and live stock other than cattle, hogs, and poultry. The last named con-

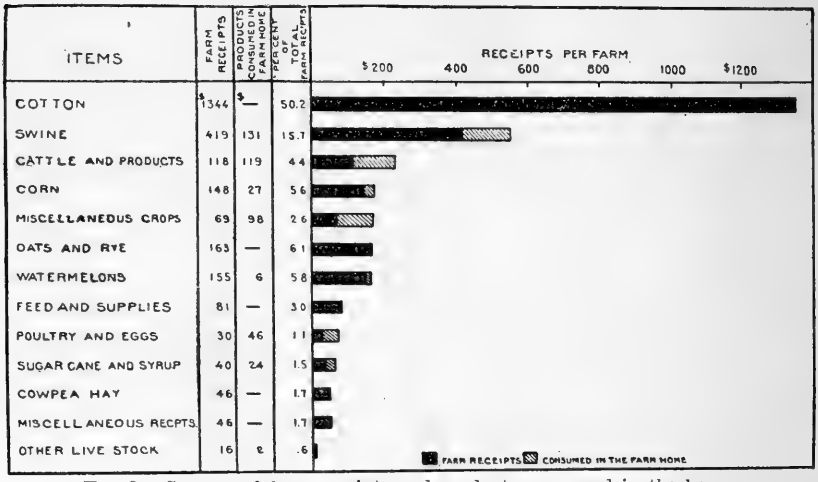

FIG. 8.—Sources of farm receipts and products consumed in the home.

sists of sales of honey and a very few colts, sheep, and goats. The miscellaneous receipts come from labor performed off of the farm, sales of wood, lumber and turpentine rights, tolls from gristmills, and rents from farm buildings, balers, and thrashing machines.

The value of swine products consumed in the farm home was found to equal nearly one-third as much as receipts from sales of such products. In the case of cattle, these two items were of almost identical value (see Table III), while the value of poultry products and of miscellaneous crops used on the farm greatly exceed the sales therefrom.

The method of measuring the size of any enterprise by direct receipts therefrom does not give the proper weight to the feed and pasture crops, the major part of which are consumed by the live stock on the farm. The total value of the crops grown is, for many purposes, a better measure, and when this measure is used the corn crop

ranks next to cotton, equaling half the value of that crop. The peanut crop then ranks fourth, and the oats, rye, hay, and sweet potato crops assume more importance than the receipts would indicate. A considerable part of the last-named crop is grown for hog pasture.

FIG. 9.—Grinding sugar cane and evaporating the sirup. Nearly every farm in this section grows a patch of sugar cane, and on many of the farms the sirup is a source of cash receipts.

CURRENT EXPENSES.

The current expenses include 82 per cent of the total farm expenses for the year if we do not consider the value of the operator's own service ($405) as a farm expense. The remaining 18 per cent consists of depreciation of buildings, machinery, and work stock, and decreases in the inventories of live stock and feeds and supplies.

The amounts and the relative importance of the principal items of current expenses are shown in figure 10. Labor constitutes more than half of these expenses, and half of this labor expense consists of cropper labor ($400). The latter represents the difference between the value of the cropper's share of the crops he produces and his expense for seed, fertilizer, and ginning, bagging, and ties. Wage labor equals 38 per cent of the labor expense, and the unpaid family labor makes up the remaining 12.5 per cent. Commercial fertilizers constitute slightly less than one-fifth of the current expenses, and feeds purchased less than one-twentieth. The three remaining important items of expense are, in order, repairs to buildings, fences, and machinery; ginning, bagging and ties; and taxes.

TENURE AND LANDLORD'S PROFITS.

Of the 106 farms included in this study, only 7 were operated by tenants. Of these, 5 paid a cash rent and 2 gave a stated amount of

lint cotton. However, 13 of the farm owners rented land in addition to the land owned, and 19 rented out parts of their farms, leaving 67 straight owner-operators. For these areas rented out a stated cotton rent or "standing" rent was the usual form of payment. No instances were found of entire farms rented for a share of the crop, though it is a common practice for single fields to be rented for a share of the crop grown, that crop usually being watermelons.

On 33 farms that were rented in whole or in part, and for which the rent paid was cash or "standing" rent, it was possible to calculate

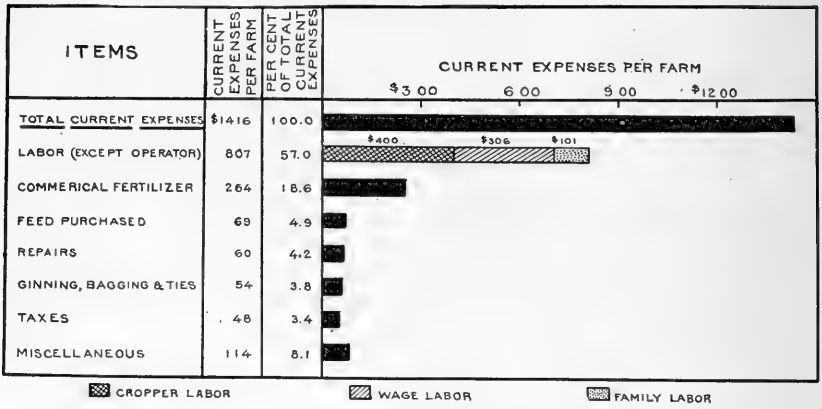

FIG. 10.—Items of current expenses.

the landlord's net return. After deducting taxes, depreciation on buildings and all other expenses, the landlord's net profit was found to be 8.25 per cent of the market price of the land.

Since so few tenant farms were found and it was desired to have all the farms on a common basis for comparison, all the farms rented in whole or in part were reduced to an owner-operator basis. This was done by adding the landlord's investment, receipts, and expenses to those of the operator, thus treating the operator as an owner. The parts of the farms that were rented out were eliminated from the farm business by deducting the investment, receipts, and expenses involved.

LABOR SYSTEMS.

WAGE SYSTEM.

Two distinct systems of hiring labor are found here, as throughout the cotton belt. One is the wage system and the other is the share cropper, or cropper, system. Usually the laborers hired by the month are contracted for in January for a period extending to the beginning of cotton picking. The usual monthly wage varies from $10 to $15 per month, with or without rations; besides which

usually a house and often a garden plot are furnished. Much labor is also hired by the day during certain seasons, and it is very common to hire by the "piece," the units being 100 pounds of cotton picked, an acre of crop "chopped" or hoed, a bushel of peanuts harvested or shelled, etc. Much of the day and "piece" work is done by women and children.

CROPPER SYSTEM.

Under the cropper system the laborer usually receives, in lieu of a cash wage, one-half share of crops he grows, and he is charged with half the cost of the fertilizer, ginning, bagging and ties, and sometimes half of the cost of seed used. The operator furnishes everything else, including work stock and all tools and equipment. In some cases the operator keeps all the cotton seed and in return does not charge the cropper for any of the fertilizer. Several other minor variations in the contract occur. In Brooks County the cropper is usually required to plant peanuts between the rows of the greater part of his corn. The peanut crop is almost always pastured off by hogs, only sufficient seed being gathered to replace that used for planting. In some instances the operator buys the cropper's share of the peanut pasture, but more commonly the cropper must have his own hogs to gather his crop if he is to profit by it.

By many persons the cropper is mistaken for a share tenant. But in this section, at least, he is regarded as a wage hand who receives his wages in the form of a share of the crop. He furnishes nothing but labor and is under practically as close supervision in the management of his crop as is the laborer employed for a fixed wage.

Most of the hired labor on these farms, both wage hands and croppers, are colored. Both labor systems are found on exactly half of the farms, including practically all the larger ones. The operator usually prefers the wage system and the laborer the cropper system. The reasons for these preferences will appear later in this discussion. The cropper is ordinarily considered to be a somewhat higher grade of laborer than is the wage hand.

Table IV shows the average cropper's receipts, expenses, and net income per cropper, cotton being figured at the average 5-year price, as it is throughout this publication.

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TABLE IV.—*Cropper's receipts, expenses, and net income, per cropper on 53 farms (124 croppers, Brooks County, Ga.).*

Cropper's receipts:		
Cotton	$297.29	
Corn and fodder	68.74	
Peanuts	19.77	
Other	2.90	
Total		$388.70
Cropper's expenses:		
Hired labor	13.56	
Family labor	60.10	
Interest on cash	7.20	
Fertilizer	36.90	
Ginning, bagging, and ties	11.64	
Seed, etc	.86	
Total		130.26
Cropper's net income[1]		258.44
Estimated value of cropper's labor		138.60

The average cropper's receipts amounted to $388.70, and the average expenses to $130.26, leaving a net income to the cropper for his labor upon his crops of $258.44, which compares with $138.60 as the amount that he would have received for the same labor had he been working for wages. In addition to this the cropper worked an average of 13.3 days for wages, most of it for the operator. Included in the list of expenses is an item of $60.10, the estimated value of the labor of the cropper's family. This item added to the cropper's net income gives $318.54 as the amount that the cropper and his family would have received for their year's work on their crops had cotton sold for a normal price. The difference between $258.44 and $138.60 represents the cropper's recompense for assuming a share of the risk of crop failure and a low market. All of the estimates upon which these calculations are based were secured from the operator and not from the cropper.

COMPARATIVE YIELDS AND COSTS BY WAGE AND BY CROPPER SYSTEM.

Table V shows the comparative yields and unit costs of crops grown by the systems just described. It will be seen that for each crop the average yields secured by the wage system are appreciably higher than those by the cropper system, the difference amounting to 16 per cent for cotton and solid corn and 8 per cent for corn planted with peanuts. These higher yields were undoubtedly due to heavier applications of fertilizer, closer supervision by the operator, and some differences in soil, since the best fields are often reserved for the wage crops.

[1] Does not include returns from labor other than on his own crop.

TABLE V.—*Comparative yields and unit cost of crops by wage and cropper systems (Brooks County, Ga.).*

Item.	Cotton.		Corn (solid).		Corn (with peanuts).		Peanuts (solid).		Peanuts (with corn).	
	Wage system.	Cropper system.	Wage system.	Cropper system.	Wage system.	Cropper system.	Wage system.	Cropper system.	Wage system.	Cropper system.
Number of farms	93	53	47	14	77	43	49	4	76	42
Average yield of principal products	[a] 316	[a] 272	[b] 15	[b] 13	[b] 13	[b] 12	Pastured.		Pastured.	
Cost per unit of principal products:										
To cropper	.....	$0.080	.....	$0.48	.....	$0.38	.....	$2.56	.....	$1.74
To operator	$0.093	.097	$0.83	1.20	$0.67	.93	.....	7.53	.....	.366
Average or total for system	.093	.089	.83	.84	.67	.66	11.09	10.09	5.70	5.40

[a] Pounds of lint. [b] Bushels.

Under the wage system the average cost per pound of lint cotton is 9.3 cents, while under the cropper system the average cost to all parties concerned is 8.9 cents. But the share of the crop that goes to the operator costs the latter 9.7 cents a pound. From the standpoint of the laborer, the cropper system gives better financial results. This is as it should be, for the cropper assumes a part of the risk incident to production, which the wage hand does not. In case of partial or total crop failure the cropper loses the use of all or part of his time, while the wage hand receives the same, or nearly the same, income as in normal years.

In the case of corn, the total average cost is approximately the same by both systems, being 83 to 84 cents a bushel. But under the cropper system there is a wide divergence between the cost to cropper and operator of the share of the crop each receives. The cropper's share of the corn costs him only 48 cents a bushel (38 cents when interplanted with peanuts), while the operator's share of cropper corn costs the operator $1.20 (93 cents with peanuts in the corn). This divergence is so great that it is not surprising that many operators who willingly accept share rent from croppers for cotton insist on cash rent for land devoted to corn, with the result that on cotton plantations generally a much larger proportion of corn than of cotton is grown under the wage system.

The major part of the operator's share of the cost of the cropper's crops consists of work stock, labor, and the use of the land. The details of these oats are shown in Table XX (see p. 52). It should be borne in mind throughout this publication that the term "costs" covers every charge, including cost of supervision and wages for the farmer, the cropper, and their families.

SIZE OF BUSINESS.

Farm-management surveys, this one included, have uniformly shown that the size of the farm business is probably the most important factor in determining the returns the farmer secures for his year's work. It is obviously impossible to secure a large return from a business of small volume, even if the margin of profit be a wide one. On the other hand, the larger the business the greater the possibility of both profits and losses. The influence of the size of the farm business on the returns is shown in Table VI. The sources and amounts of the farm receipts and expenses, and the net returns, presented from several different points of view, are shown for the groups of farms of different sizes and for the white and colored farmers separately.

TABLE VI.—*Relation of size of farm and race of operator to farm receipts, expenses, and net income (Brooks County, Ga.).*

Item.	Farms with total crop area of—					All farms.	All white operators.	All colored operators.
	Less than 50 acres.	50 to 74 acres.	75 to 149 acres.	150 to 249 acres.	250 acres and over.			
Number of farms	18	24	27	21	16	106	86	20
Acres of crop land per farm	33	63	111	192	389	145	166	54
Capital per farm	$2,091	$4,049	$7,180	$11,110	$24,500	$8,992	$13,329	$3,275
Receipts:								
Crops	$413	$845	$1,420	$2,560	$5,527	$1,964	$2,213	$896
Live stock (exclusive of work stock)	101	185	460	931	1,482	584	702	80
Feed and supplies	35	39	92	99	155	81	87	53
Miscellaneous	11	23	70	14	118	46	49	31
Total receipts	560	1,092	2,042	3,604	7,282	2,675	3,051	1,060
Expenses:								
Current	$232	$541	$996	$1,846	$4,195	$1,416	$1,639	$453
Depreciation	44	88	124	172	325	142	158	73
Decrease feed and supplies	21	40	83	138	92	75	84	36
Decrease live stock (including work stock)	37	63	71	114	198	90	101	42
Total expenses	334	732	1,274	2,270	4,810	1,723	1,982	604
Farm income	$226	$360	$768	$1,334	$2,471	$952	$1,069	$456
Interest at 8 per cent	167	324	575	888	1,959	720	826	262
Labor income	59	39	193	446	512	232	243	194
Food products used in home	267	377	479	544	612	453	507	228
Wood used by operator	12	14	14	16	18	15	15	14
House rent	33	53	98	133	306	116	132	40
Farmer's earnings	371	480	784	1,139	1,448	816	897	476
Estimated value family labor	$61	$118	$98	$119	$102	$101	$88	$159
Family earnings	432	598	882	1,258	1,550	917	985	635
Estimated value of operator's labor	$153	$270	$372	$442	$900	$405	$446	$231
Per cent return on investment[a]	4.4	4.6	6.4	8.9	6.7	6.2	6.2	6.2

[a] Unweighted averages.

It is seen that the average receipts, expenses, and net farm income (or farm income)[1] for the different groups vary in almost direct proportion to the size of the farm. The same is true of both the labor income and the farmer's earnings. Thus the farm income varies from $226 for the smallest-farm size group to $2,471 for the largest-farm group, giving an average of $1,069 for all of the white farmers, $456 for the colored, and $952 for all the farms taken together. This figure represents the fund available for the living of the farmer and his family, provided he owns his farm unmortgaged, in addition to the unpaid family labor and the products furnished directly by the farm. This is of special interest to the unmortgaged farm owner.

When the earnings of the farm capital, or interest upon the value of the farm and equipment, is subtracted from the farm income, the difference is called labor income. This item varies among the different groups of farms from $58 for the smallest farm to $512 for the largest one, with an average of $232 for all farms. The labor income is the measure of farm efficiency used in most farm-management surveys. It is of special concern to the tenant and the farmer who carries a mortgage. It must be remembered, however, that it does not take into account the living that the farmer and his family get directly from the farm.

When the items last named, consisting of food, fuel,[2] and house rent,[3] are added to the labor income, the sum is what in this publication is called the farmer's earnings. This sum varies on these groups of farms from $370 for the smallest farm size group to $1,448 for the largest farm group, with averages of $897, $476, and $816 for the white, colored, and all farms, respectively. The farmer's earnings are the measure of farm returns that has been used more than any other throughout this study.

The farmer's earnings do not include the value of the unpaid family labor. The latter averaged $101, and when added to the former equals what is shown in the table as family earnings. This figure represents the value of all that the farmer and his family secure from the farm in addition to the interest on the farm investment. It is the amount that the tenant would have for a living for himself and family. The sum of this figure and the interest on the investment represents the total net returns that the unmortgaged farm owner and his family secure from his farm, the average amount of which varies from $599 on the smallest farm group to $3,509 on the largest farm group, and $1,811, $897, and $1,637 for all white, all colored, and all farms, respectively.

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[1] See definition in footnote, p. 13.

[2] Farm value of wood (uncut) used in the farm home. This does not include wood used by croppers and wage hands. However, the latter is included in labor costs in calculating costs of production.

[3] Ten per cent of the present value of the dwelling (not the cost when new) is taken to cover the interest, taxes, and insurance.

A further study of Table VI shows that on the larger farms the operators live in much better houses and secure much greater values of food products from the farm than do those on the smaller farms. Between the extreme size groups the values of family food furnished by the farm varies from $267 to $612, and the average rental value of the houses from $33 to $306.

On the farms of the smallest farm group the value of family living obtained from the farm actually exceeded the net income from all other sources by 39 per cent, but on those of the largest farm group the family living furnished equaled only 38 per cent of all of the other net receipts. In other words, on the small farms the family living obtained is an all-important factor, while on the larger farms it is relatively a secondary consideration.

Another method of measuring the profits of the farm is to subtract the value of the farmer's labor from the farm income and call the remainder returns on the capital. Figured in this way, and not considering the item of family living obtained, these farms returned an average of 6.2 per cent on the investment. On the two groups of smaller farms the per cent returns were lowest, while on the fourth group, or good-sized family farms, they were highest.

QUALITY OF FARM BUSINESS.

CROP YIELDS.

On farms of a given size the yields secured constitute perhaps the most important factor in determining the farm profits. In Table VII the farms are grouped according to the average yield of crops. The group of farms that have the lowest yields have an average crop index[1] of 69, which means that the crop yields equaled but 69 per cent of the average yields secured by all of the farms. This group of farms returned average farmer's earnings[2] of $586, while for the other groups the crop indexes were 92, 104, and 126, and the farmer's earnings $708, $840, and $1,061, respectively. But the farmer's earnings are largely determined by the size of the farm. To eliminate the element of size and see the effect of crop yields independently, the index of earnings[2] and the per cent return on investment are shown. The group of farms with the lowest yields gave an index of earnings of 80, or in other words, farmer's earnings

[1] The crop index represents the relative yields of all crops on any farm or group of farms as compared with the average yield of all crops on all the farms in the survey, the latter being expressed as 100. For method of calculating, see Department of Agriculture Bulletin 341, p. 75. The index here used is weighted, the acreage of each crop being weighted in proportion to the average amount of man labor expended on an acre of that crop. This weighting is necessary because of the wide difference in the relative intensity of the crops grown and of the different proportions in which these crops are combined on the different farms.

[2] See definitions in footnote, p. 13.

which equal but 80 per cent of the average farmer's earnings secured from farms of similar size. On the other groups of farms with increasing average crop yields, the index of earnings increased regularly to 116, while the corresponding returns on investment increased similarly from 2.9 per cent to 8.2 per cent.

TABLE VII.—*Relation of crop index to farm returns (Brooks County, Ga.).*

Crop index.[a]	Number of farms.	Average crop index.	Farmer's earnings.	Index of earnings.	Per cent return on investment.
Less than 0.80	13	69	$586	80	2.9
0.80 to 0.99	43	92	708	87	5.6
1.00 to 1.09	21	104	840	108	6.7
1.10 and over	29	126	1,061	116	8.2
All farms	106	100	816	100	6.2

[a] See definition of crop index on p. 22.

The close dependence of profits upon crop yields can be shown more concretely by considering for each crop separately the relation between costs and yields. This relation is shown by Table VIII.[1] In the case of every crop, as the yields increased the cost per unit of crop decreased regularly, while the profits per acre correspondingly increased. Thus, the cotton yields of less than 200 pounds per acre of net lint cost 11.6 cents per pound to produce, but this cost decreased to 7.5 cents per pound when the yields exceeded 400 pounds per acre. The low yields mentioned show a loss of $1.63 per acre, while the high yields returned an acre profit of $18.19. The farms that secured the higher yields of cotton were the ones which also returned the largest net profits for the year's business. Thus the farms that secured cotton yields of less than 200 pounds per acre returned farmers' earnings equal to only 47 per cent of the average returned by all farms of a similar size, whereas the farms yielding more than 400 pounds per acre returned earnings 37 per cent larger than the average.

[1] It will be noticed that the number of records for cotton and corn are greater than the number of farms surveyed. This is due to the fact that the costs of the wage crops have been kept separate from those of the croppers, since the two sets of crops are handled by more or less independent systems and are treated differently. Thus, many of the farms furnish two separate records of costs of cotton and corn. In this and one or two other tabulations these separate records have been treated as though coming from different farms.

TABLE VIII.—*Relation of crop yields to costs per crop unit and profits per acre (Brooks County, Ga.).*

Crop.	Yield.	Number of farms.	Average acre yield.	Cost per crop unit.	Profit or loss, per acre.
Cotton	Under 200 pounds	15	172	$0.116	a—$1.63
	200 to 299 pounds	68	258	.091	5.29
	300 to 399 pounds	43	338	.078	7.96
	400 and over	17	450	.075	18.19
	Average	143	299	.091	7.04
Corn, solid	Under 10 bushels	12	9.3	1.26	a—4.66
	10 to 15 bushels	33	13.4	.85	a—1.16
	16 to 20 bushels	11	17.8	.73	.15
	Over 20 bushels	5	24.2	.66	2.54
	Average	61	14.3	.89	a—1.31
Corn with peanuts	Under 10 bushels	18	8.2	.80	a—.17
	10 to 12 bushels	37	10.1	.74	.04
	12 to 15 bushels	33	13.6	.70	.34
	Over 15 bushels	32	16.7	.57	2.92
	Average	120	12.4	.70	.82
Oats	Under 10 bushels	8	8.4	.84	a—2.53
	10 to 15 bushels	22	11.2	.73	a—1.68
	15 to 20 bushels	22	16.1	.47	1.21
	20 to 25 bushels	10	21.5	.37	3.42
	Over 25 bushels	8	27.9	.36	4.44
	Average	70	15.8	.56	.56
Cowpea hay	Under 0.5 ton	16	.34	26.88	a—1.74
	0.5 to 0.75 ton	37	.56	17.20	.68
	0.75 to 1 ton	5	.82	12.03	5.42
	1 ton and over	8	1.06	11.23	8.62
	Average	66	.59	18.57	1.42
Watermelons	Under 0.35 carload	5	.29	73.36	a—3.69
	0.35 to 0.49 carload	13	.42	53.68	1.84
	0.50 to 0.59 carload	17	.51	51.26	2.01
	0.60 and over	10	.70	41.60	15.08
	Average	45	.50	52.54	4.23
Sweet potatoes	Under 100 bushels	7	70	.36	14.18
	100 bushels	12	100	.28	27.27
	Over 100 bushels	7	162	.22	65.01
	Average	26	108	.29	33.90

a Loss.

These results would indicate that where the market prices and other conditions are similar to those found at the time these records were taken it is necessary to obtain a cotton yield greater that 200 pounds of net lint per acre if a profit is to be secured. But these records were taken before the cotton-boll weevil had invaded the county. With the expenses of fighting the weevil added, either yields higher than 200 pounds per acre, or prices higher than 10 cents per pound are necessary if the crop is to show a profit to the grower.

The data presented also indicate that under the conditions found, with corn at an average price of 75 cents per bushel, it is necessary to secure a yield above 10 bushels per acre of corn planted in rows alternating with peanuts, or about 18 bushels of corn planted "solid," if a profit is to be shown when figured by cost determination methods.

Similarly, oats must yield about 15 bushels to show a profit at an average price of approximately 50 cents; but when the yield slightly exceeds 25 bushels, the cost is reduced to 36 cents per bushel. The latter yields a good margin of profit.

Cowpea hay yielding one-third of a ton to the acre costs $26.88 per ton to produce, and entailed a loss of $1.74 per acre. Increasing the

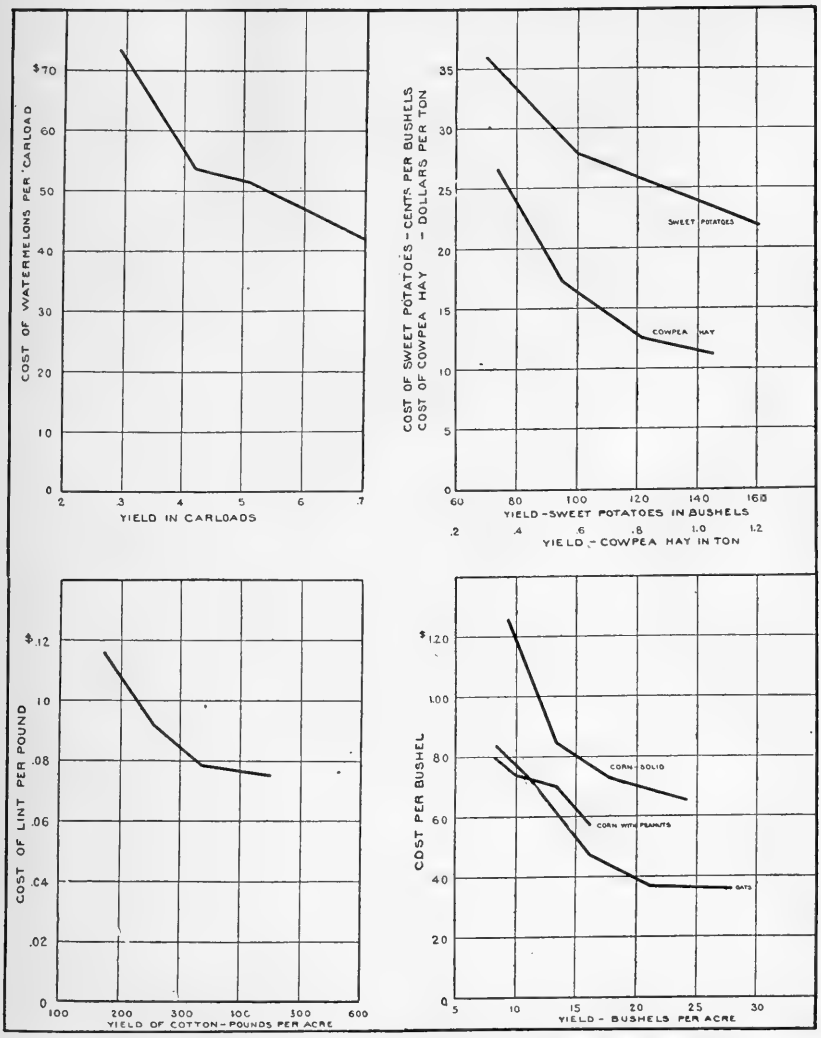

FIG. 11.—Relation of yields of principal crops to cost per crop unit.

yield to one-half a ton brought the cost down to approximately the market price, and increasing it to slightly over a ton reduced the cost per ton to $11.23 and resulted in an acre profit of $8.62.

Watermelon yields of one-third of a carload per acre must bring about $75 per car at the point of loading, if the grower is to "break

even." But if he increases this yield to half a carload he can sell for $50 without loss, and if he further increases the production to two-thirds of a car per acre, $40 per load will cover all costs.

All the yields of sweet potatoes found show a wide margin of profit. Average yields of 70 bushels per acre cost 36 cents per bushel; increasing the yield to 100 bushels reduced the cost to 28 cents, while a further increase to 162 bushels further reduced the cost to 22 cents. The records for this crop are few in number and represent small scale production. But the costs and margins shown would indicate that the crop offers commercial possibilities for the grower.

The manner in which the costs per crop unit decrease with increasing yields is shown for the six important crops by the curves in figure 11.

There is, of course, for each crop under any set of conditions a point beyond which any further increase in yield can be secured only at a cost per unit higher than the returns. On some individual farms in Brooks County this point of "diminishing returns" has no doubt been reached or exceeded; but these tabulations show that in no case have any of the groups of farms studied brought the crop yields to that point. Evidently one of the surest means of increasing the profitableness of these farms is the increasing of the crop yields.

UTILIZATION OF WORK-STOCK LABOR.

The largest item of cost, next to that of man labor, is the cost of work stock. In this study it was found to amount to $509 per farm, which is approximately equal to half of the cost of all man labor, or 19.2 per cent of the cost of producing all farm crops. Figured on the basis of the cost per day of productive labor, the work stock cost $1.07, as compared with $1.20 for man labor. Manifestly, the utilization of work stock so as to keep down this large element of cost is one of the chief factors in determining profits on these farms.

TABLE IX.—*Relation of number of productive days mule labor per mule to farm returns, acres per mule, and cost of mule labor per day (Brooks County, Ga.).*

Productive days mule labor per mule.	Number of farms.	Average number of mule days per mule.	Cost of mule labor per day.
75 and less	12	62	$1.70
76 to 100	26	.88	1.23
101 to 125	33	112	1.00
126 to 150	21	137	.84
151 and over	14	172	.72
All farms	106	113	1.07

Increasing the amount of productive labor per mule reduces the cost per day of such labor, resulting in a lower cost of production and larger farm profits. This is shown by Table IX, in which the farms are grouped on the basis of the number of days of labor per mule. On the group of farms reporting the least productice labor per mule, or an average of 62 days per year, the cost per day of mule labor amounted to $1.70, which daily cost decreased regularly to 72 cents on the group reporting the most labor, or 172 days per mule. The striking relation between increasing days' work per mule and decreasing cost per day of mule labor is shown by the curve in figure 12.

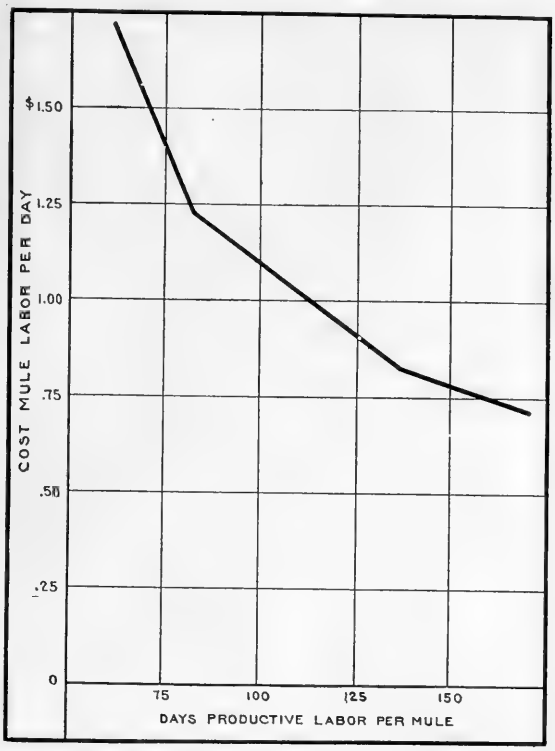

FIG. 12.—Relation of days of productive labor per mule to the cost per day.

It may well be asked by what means some of the farms provided so much more employment for the work stock than did others. The data in Table X indicate that the area cultivated per mule is the most important factor.

TABLE X.—*Relation of number of acres of crop land per mule to utilization of mule labor and to farm returns (Brooks County, Ga.).*

Number of acres crop land per mule.	Number of farms.	Average acres crop land per mule.	Acres of crop land per farm.	Acres of cotton per mule.	Days mule labor per mule.	Cost of cotton per pound.	Index of earnings.
Less than 20	11	16	48	5.1	67	$0.095	80
20 to 24.9	18	22	81	7.8	89	.092	71
25 to 29.9	21	27	113	7.9	108	.092	103
30 to 34.9	24	32	144	9.0	124	.083	123
35 and over	32	42	233	9.4	139	.080	101
All farms	106	31	145	8.6	113	.090	100

Acres of crop land per mule.—In Table X the farms are grouped according to the amount of crop land worked per mule. The farms that have the fewest acres per mule, or an average of 16, secured only 67 days productive work from each animal, but as the number of acres increased, the number of days per mule increased regularly to an average of 139 on the group that operated the largest area per animal. This increased employment of the work stock resulted in a corresponding decrease in the cost per day of productive labor from $1.50 to $0.90. Such an economy in so important an item of cost must necessarily result in lower costs of production and greater profits. The cost of producing cotton decreased from 9½ cents per pound on the first-mentioned group of farms to 8.3 cents on the farms that operated 30 or 35 acres per mule, but it increased to 9 cents on the farms that had more than 35 acres per animal. This result was corroborated by the index of earnings, which increases markedly up to the point of 30 to 35 acres per mule. Beyond this the profits are less.

An apparent irregularity appears in that the index earnings were greater for the first than for the second group of farms shown in Table X. The explanation is that two or three farms with good crop yields and a low investment secured a high percentage of returns in spite of inadequate utilization of work stock. The number of farms in the group was insufficient fully to neutralize the influence of these few abnormal farms.

It will be noted that the farms which cultivated the fewest acres per mule average smaller in size than those which operated a larger area per animal. Undoubtedly the larger farms possess advantages which facilitate their organization upon a basis providing for the more efficient employment of work stock labor.

It may further be stated that the cultivation of an increased number of acres per work animal was not at the expense of crop yields. In fact, the lowest yields were found in the group that worked the smallest area per animal.

It is not probable that all the differences in costs and profits shown can be attributed to the differences in relative employment of work stock, for the men who keep their work stock efficiently employed are likely to be also more efficient in other respects. But the method of grouping used eliminates the effect of other factors as far as possible, and it is believed that the influence of area per mule has not been greatly overemphasized.

Farmers are often advised to reduce the number of acres per mule in order to cultivate the remaining acres more intensively, but the preceding table would seem to show that it is much more important to cultivate a sufficient number of acres per work animal to keep that

labor efficiently employed. From 30 to 35 acres per mule would seem to be the proper acreage under the conditions here found. The soil on these farms is a light sand and is easily cultivated. On a heavier type of soil, no doubt, fewer acres per mule would be found to be more desirable.

RELATION OF AMOUNT OF TILLAGE TO COSTS AND PROFITS.

Much has been said regarding the benefits arising from deep plowing, thorough and frequent preparation of the seedbed, and frequency of cultivation, much of the advice on these points making little or no distinction between types of soil. In gathering data for the purpose of calculating costs of production in this study, the amount of man and mule labor involved in each operation of each crop was ascertained for each farm. It is thus possible to study the profitableness of different amounts of tillage.

Using the amount of mule labor expended per acre as probably the best available measure of the degree of tillage, the effect of that factor upon the profits and costs of cotton have been tabulated and the results shown in Table XI. The cotton crop was used because it was the most important crop grown here and because for it the largest number of records are available. The figures upon which this table is based include all of the mule labor spent on the cotton up to and including the planting of the crop.

TABLE XI.—*Relation of amount of mule labor expended in preparatory tillage of cotton to costs and profits (Brooks County, Ga.).*

Days mule labor per acre, preparatory tillage.	Number of records.	Average mule days preparatory tillage.	Yield of net lint.	Profit per acre.	Cost of net lint per pound.
			Pounds.		
Less than 1.5	15	1.14	292	$8.47	$0.085
1.5 to 1.9	44	1.77	293	8.37	.087
2.0 to 2.4	51	2.22	298	6.53	.093
2.5 and over	33	2.89	311	6.22	.096
All records	143	2.12	299	7.04	.091

It will be seen that the increasing amounts of mule labor were accompanied by slowly increasing yields, but that these yields were not sufficient to offset the increased cost. Thus the cost per pound of net lint cotton increased regularly from 8.5 cents for the group that expended less than 1.5 days of mule labor per acre, to 9.6 cents for those on which more than 2.5 days were expended. These increased costs cut the profits per acre from $8.47 to $6.22.

The results shown in this table would indicate that the extra labor cost involved in the deeper and more prolonged preparatory tillage

of cotton is not profitable on the light, sandy soils of this area. A similar tabulation based on the total amount of mule labor expended on cotton up to the time of harvesting the crop gave similar results, though slightly less pronounced. The results in this case were less pronounced because there is less difference in the practices of cultivating the crop after planting than there is up to that time. Similar tabulations based on man labor gave less consistent results, since man labor is not so good a measure of the amount of tillage, owing to the differences in the number of mules used per team. No doubt different results would have been found on a heavier type of soil.

RELATION OF AMOUNT OF FERTILIZER APPLICATIONS TO YIELDS, COSTS, AND PROFITS.

To calculate the cost of production it was necessary to ascertain the cost per acre of the fertilizers applied to each crop. The data thus gotten permit an interesting study of the relative economy of the application of varying amounts of fertilizers on the principal crops. Using the cost per acre as a measure of the rate of application, since it is the only common measure for all of the fertilizer materials used, the effects on yields, costs, and profits have been tabulated for the principal crops, as shown in Table XII. The cost covers all classes of fertilizing materials applied, including stable manure, cottonseed meal, and commercial fertilizers, the last named representing the greater part of the costs. On none of the crops tabulated, except sweet potatoes, and possibly watermelons, was stable manure an important source of fertilizers. Approximately half the farms purchased the raw materials and did the mixing at home, while the others used ready-mixed fertilizers. No account has been taken of the residual effects of fertilizers applied to preceding crops, but these are reduced to a minimum in a region with such a light, sandy soil, heavy rainfall, and long growing season; and in any case they tend to neutralize each other when a group of farms are considered, as has been done in these tabulations.

TABLE XII.—*Relation of cost of fertilizer applications to yields, costs, and profits (Brooks County, Ga.).*

Crop.	Cost of fertilizers per acre.	Number of records.	Average cost of fertilizer per acre.	Yield per acre.	Cost per crop unit.	Profit or loss per acre.
				Pounds.		
Cotton	$2 and less	23	$1.42	[a] 263	$0.087	$7.45
	$2 to $4	56	3.00	283	.088	8.00
	$4 to $6	35	4.85	293	.096	4.83
	$6 to $8	13	6.78	314	.101	4.18
	$8 to $10	9	8.76	383	.094	9.15
	$10 and over	7	11.32	427	.086	11.00
	Average	143	4.32	299	.091	7.04

[a] Net lint.

TABLE XII.—*Relation of cost of fertilizer applications to yields, costs, and profits (Brooks County, Ga.)*—Continued.

Crop.	Cost of fertilizers per acre.	Number of records.	Average cost of fertilizer per acre.	Yield per acre.	Cost per crop unit.	Profit or loss per acre.
				Bushels.		
Corn, solid	$1.50 and less	28	$0.70	13.4	$0.85	*a*—$0.79
	$1.50 to $2.50	22	1.89	14.1	.86	*a*— 1.02
	$2.50 and over	11	4.19	16.7	1.03	*a*— 3.40
	Average	61	1.76	14.3	.89	*a*— 1.31
Corn, with peanuts	0	16	0	11.2	.57	1.72
	Under $1.50	39	.97	11.5	.63	1.44
	$1.50 to $2.50	46	1.91	12.6	.74	.64
	$2.50 and over	19	3.21	15.1	.94	*a*— .75
	Average	120	1.56	12.4	.70	.82
Oats	0	55	0	14.9	.55	.76
	Over 0	15	1.92	19.2	.61	*a*— .14
	Average	70	.41	15.8	.56	.56
				Carload.		
Watermelons	$7 and less	16	5.86	.48	47.60	4.06
	$7 to $9	15	7.82	.50	50.48	2.96
	$9 and over	14	9.80	.52	52.50	5.80
	Average	45	7.75	.50	52.54	4.23
				Bushels.		
Sweet potatoes	$3 and less	7	1.93	85	.28	26.34
	$3 to $4	8	3.21	96	.30	26.78
	$4 to $7	5	5.12	113	.29	29.59
	$7 and over	6	9.55	148	.30	55.83
	Average	26	4.70	108	.29	33.96

a Loss.

It was found that with every crop for which there were a sufficient number of records to make tabulations, increasing amounts of fertilizer resulted in regular and appreciable increases in yields. But with every crop except sweet potatoes the increased yields were obtained at a higher cost per unit of crop, with exceptions to be noted, and at lower profits per acre. Thus the cost of corn varied from 85 cents per bushel, with the least amount of fertilizer, to $1.03, with the largest applications; the corn planted with peanuts cost 57 cents per bushel without fertilizer, which cost increased to 94 cents when the most fertilizer was applied. The profits per acre decreased in even greater proportion than the cost per bushel increased.

Cotton to which the value of the fertilizers applied amounted to less than $2 per acre cost 8.7 cents per pound of net lint to produce. But with increasing amounts of fertilizer up to $8 per acre, the cost increased to 10.1 cents per pound. Apparently, increasing the fertilizer applications beyond $8 per acre reduced the cost below the high points of the preceding groups. But the small number of records for these highest applications renders the results unreliable for the last two groups.

Only 15 out of 70 farmers applied any fertilizer to the oat crop, a fact signifying that a large majority of them had not found it to be a profitable practice to make such applications. The 15 which did use fertilizers, to the extent of $1.92 per acre, increased their yield, but in so doing the cost per bushel was increased from 55 cents to 61 cents, and a small profit per acre was turned into a slight loss.

Watermelons are fertilized rather heavily by nearly all growers, about 15 per cent of the value of the applications consisting of stable manure. The heavier applications resulted in somewhat increased yields, but at the expense of higher costs per unit of crop. Thus increasing amounts of fertilizers resulted in increasing the cost per carload from $47.60 to $50.48 and $52.50, respectively. This increasing cost per carload resulted in a correspondingly reduced profit per acre in the case of the second group, but the last group offers an apparent exception in that it shows the largest profit in spite of the high cost per carload. The higher prices obtained for the melons receiving the most fertilizer were, no doubt, due to the resulting better quality of melons and to the fact that they matured earlier and reached a more profitable market than did the melons produced on the other farms. Better salesmanship may possibly have been a factor in securing the high prices.

The records for sweet-potato costs are few in number and represent only small-scale production. The fertilizers applied consisted largely of stable manure and cottonseed meal. The results are therefore not comparable to those obtained from records of other crops. The heavier applications were accompanied by much the higher yields, and the margin of profit was so wide in every case that the higher yields gave much greater profits, though the cost per bushel was nearly the same for all groups.

The conclusion to be drawn from this table would seem to be that on this type of soil, with the type of farming and the fertilizer practice found on these farms, it does not pay to use the larger amounts of commercial fertilizers on the common field crops. Watermelons may offer a possible exception, and sweet potatoes are distinctly exceptional. It should be remembered that on these farms the organic matter in the soil is largely maintained by the extensive growing and pasturing off of legumes, particularly peanuts. On a heavier type of soil different results would probably have been found.

ORGANIZATION.

DIVERSITY.

Much has been said and written regarding the advantages of a diversified type of farming. The greater safety from losses due to crop failure or demoralized markets, the better distribution of labor throughout the year, and still other benefits arising from diversifi-

cation have been repeatedly urged and are familiar to nearly everyone. Especially was the matter of diversity brought to the attention of the farmers of the South by the decline in the price of cotton following the outbreak of the European war. More particularly has the recent advent of the boll weevil into the southeastern part of the cotton belt increased the hazard of dependence upon cotton and made the matter an urgent one with farmers of that section. It is of peculiar interest, therefore, to study the farms of a locality where a distinctly diversified agriculture, with cotton as the most important source of income, has been practiced for a long term of years. Such an area is found in Brooks County, which has for years been noted for the extent of diversification practiced. This is particularly true of the southern half of the county, which is the area covered by this survey. It has been pointed out that the soil here is a light-gray sand, representative of the Norfolk sandy loam and closely related types of that series. On this light soil a certain degree of diversification, including the growing of legumes, is a necessity if soil fertility is to be maintained at a point where profitable yields may be secured. Necessity, thus, to a large extent, accounts for the development of the hog industry in this community. Further north in the county the soils become somewhat heavier, grading into the types represented by the Rustan and Tifton series. These latter are better adapted to cotton than are the lighter soils of the southern part of the county. As a result, cotton is grown there more largely to the exclusion of other crops.

To study the effect of different degrees of diversification upon profits, the farms studied have been grouped according to the degree of diversity practiced, the measure used being the diversity index.[1] The results are shown in Table XIII. The most highly diversified farms averaged the largest in size. Eliminating the effect of size by the use of the index of earnings, it is seen that the least diversification returned 15 per cent less than the average for farms of a similar size, while the most diversification returned 16 per cent more than the average. It thus appears that under conditions found on these farms, with market prices normal, greater diversity means greater profits. It should not be overlooked that the least diversified farms are largely cotton farms, which carry the risk of both low yields and low markets, a risk that in 1914 proved all but disastrous to these farmers.

[1] On a farm with enterprises all of equal size, the number of enterprises will be the diversity index. For example, a farm with 4 enterprises, all of equal importance, would have a diversity index of 4. However, it is seldom that any two enterprises are of exactly the same size or importance. The method of calculating the diversity index, however, reduces all the enterprises to a comparable basis. For the method of calculating the index see Department of Agriculture Bulletin 341, p. 81.

TABLE XIII.—*Relation of diversity to cost of work-stock labor and to farm profits (Brooks County, Ga.).*

Diversity index.	Number of farms.	Average diversity index.	Acres of crop land per farm.	Cost of mule labor per day.	Crop index.	Index of earnings.
Less than 2	27	1.5	89	$1.20	0.98	85
2 to 3.9	54	3.0	147	1.04	1.02	100
4 and over	25	4.7	194	.98	1.00	116
All farms	106	3.0	145	1.07	1.00	106

It is easily possible for diversification to be carried to an unprofitable extreme.[1] Beyond a not well-defined limit, further diversification may be at the expense of skill and attention to the details of the major sources of income. But it does not appear that any of these groups of farmers have gone beyond that limit.

Prominent among the advantages to be gained from diversification, increased crop yields, resulting from more frequent rotation, and better employment of labor throughout the year, are usually stressed. However, on these farms there appears to be but little relation between diversity and crop yields, the more diversified farms showing only a slightly higher crop index; but the diversified farms do show a distinctly better utilization of the work-stock labor, and it has been shown elsewhere that this factor is an important one. With the increase in diversity, the average number of days of productive work-stock labor per mule increased from 98 to 115 and 127, with resulting decreasing costs per day from $1.20 to $1.04 and $0.98.

It thus appears that the more highly diversified farms have a slight advantage in yields of crops, and a considerable advantage in providing profitable employment for the work stock, and in returning larger profits per farm.

PRODUCTION OF HOME SUPPLIES.

Closely associated with the subject of diversification is the production on the farm of supplies consumed in the home. For many years the farmers of Brooks County have practiced, and prided themselves upon, the policy of producing at home a large part of the family living. In but few places will a class of farmers be found that produce for home use a larger amount of food products per family or per person than do the white farmers in this area.

[1] Department of Agriculture Bulletin 341, p. 82.

TABLE XIV.—*Relation of size of farm and labor of operator to value of food consumed in the home (Brooks County, Ga.).*

	Farms with total crop area of—					All farms.	All white operators.	All colored operators.
	Less than 50 acres.	50 to 74 acres.	75 to 149 acres.	150 to 249 acres.	250 acres and over.			
Number of farms	18	24	27	21	16	106	86	20
Number of adults per farm	3.7	5.0	6.0	5.8	5.7	5.3	5.5	5.1
Value of family food:								
Purchased	$45.90	$69.60	$67.91	$81.09	$104.25	$72.70	$77.65	$56.30
Produced on farm	266.90	375.71	479.10	543.60	611.69	453.29	506.59	228.30
Total per family	312.80	445.31	547.01	624.69	715.94	525.99	584.24	284.60
Total per person	84.54	89.06	91.17	107.70	125.60	99.25	106.22	55.80
Per cent of family food contributed by farm	85.	84.	88.	87.	85.	86.	87.	80.
Per cent of food grown on farm consisting of—								
Hog products	38.4	31.6	29.0	26.9	24.5	29.0	27.8	39.9
Poultry and eggs	7.6	9.1	9.9	11.8	11.0	10.2	10.7	6.2
Dairy products	19.3	23.9	26.2	25.7	32.0	26.2	27.4	14.6
Other live-stock products	1.1	.6	.2	.2	.2	.4	.4	.1
Total live-stock products	66.4	65.2	65.3	64.6	67.7	65.8	66.3	60.8
Fruits and nuts	2.9	4.4	5.4	7.8	4.2	5.2	5.5	2.7
Vegetables	15.3	18.2	17.0	17.8	18.5	17.6	17.7	16.7
Other products [a]	15.4	12.2	12.3	9.8	9.6	11.4	10.5	19.8
Per cent food contributed by farm is of the farmer's earnings	72	78	61	48	42	54	57	48

[a] Corn meal and hominy, sirup, sugar cane, peanuts.

The total value per farm of that part of the family living furnished by the farm and the relation that this factor bears to the farm returns from other sources have been shown for farms of different size in Table VI. Further details of the values [1] of family food, both purchased and grown at home, are given in Table XIV. Approximately 85 per cent of the family food consumed is furnished by the farm, and this proportion is substantially the same for all sizes of farms, though somewhat lower for the colored farmers. The figures show that there is a close relation between the size of the farm and the amount of food consumed, both per family and per person.[2] Thus, the average value of food consumed on the group of farms under 50 acres is $312.80 per family, or $84.54 per person, as compared with $715.94 and $125.60 on the farms of 250 acres and over. It will be seen further that the food supplied by the larger farms furnishes a more varied and better quality of diet than that on the smaller ones. In other words, the larger farms support a much higher standard of living as well as furnish larger net returns in other forms.

[1] The food values given are based upon the average prices on the farms and in the local markets, and are conservative.

[2] A person, as the term is used in this bulletin, means the equivalent of an adult fed in the farm home throughout the year. The number of adults per farm includes hired help and others boarded in the operator's home.

Two-thirds of the value of the food grown consists of animal products. On the small farms nearly two-thirds of the animal products come from swine, but as the farms increase in size dairy and poultry products find a more important place. Likewise, vegetables, fruits, and nuts are of more importance on the larger farms. Other products, consisting principally of corn meal and sirup, occupy a relatively more important place in the diet on the smaller farms.

By reference to figure 13 it is seen that swine products and dairy products each constitute more than one-fourth of the total value of family food furnished by the farm, while vegetables make up one-sixth of the total, miscellaneous products slightly more than one-tenth, poultry and eggs nearly a like amount, and fruit and nuts one-twentieth.

The quantities and the values per farm and per person are shown in detail in Table XV for each item of food, both purchased and furnished by the farm.

TABLE XV.—*Family food purchased and produced on the farm; amounts and values per family and per person (106 farms, Brooks County, Ga.).*

Kinds of food.	Unit.	Per family.		Per person.[a]	
		Quantity.	Value.	Quantity.	Value.
Purchased:					
Flour	Pounds	810	$30.34	153	$5.73
Sugar	do	191	13.37	36	2.52
Coffee, tea, cocoa, chocolate, postum	do		7.33		1.38
Rice	do	55	4.37	10	.83
Meat, lard, cheese, fish	do		2.60		.49
All other food			14.69		2.77
Total food purchased			72.70		13.72
Produced on farm:					
Pork	Pounds	770	108.40	145	20.47
Lard	do	185	23.09	35	4.34
Dairy products [b]	Gallons	471	118.50	89	22.36
Poultry	Number	69	24.50	13	4.62
Eggs	Dozens	111	21.90	21	4.13
Other live-stock products [c]			1.56		.29
Corn (meal and hominy) [d]	Bushels	27.4	27.40	5.2	5.17
Cane sirup	Gallons	38.6	15.50	7.3	2.92
Sugar cane	Stalks	524	8.02	99	1.51
Peanuts	Bushels	.86	.86	.16	.16
Pecans	Pounds	40.9	7.38	7.7	1.39
Sweet potatoes	Bushels	52.2	26.10	9.85	4.92
Irish potatoes	do	8.9	8.86	1.68	1.67
Beans and peas (green, in hulls) [e]	do	15.2	11.30	2.87	2.13
Turnips, rutabagas, and collards			6.80		1.28
Watermelons	Number	128	6.32	24.15	1.19
Tomatoes	Bushels	4.4	4.51	.83	.86
Cabbage	Heads	83	4.12	15.67	.78
Green corn	Bushels	3.8	3.83	.72	.72
Okra	do	2.6	2.60	.49	.49
Onions	do	1.6	1.80	.30	.34
Squash and pumpkins	do	2.0	.88	.38	.17
Cucumbers	do	.9	.87	.17	.16
Beets	do	.8	.83	.15	.16
Other vegetables			1.02		.19
Grapes (scuppernong)	Bushels	3.9	4.70	.74	.89
Peaches	do	1.9	3.75	.36	.71
Figs	do	2.3	2.73	.43	.52
Pears	do	2.1	2.12	.40	.40
Oranges and grape fruit			1.77		.33
Apples and vinegar			1.33		.25
Total food produced			453.29		85.52

NOTE.—Values of food produced represent sale values on the farm.

[a] Adult equivalent.
[b] Milk, cream, and butter expressed as their equivalents in gallons of whole milk.
[c] Honey, $1.52; goats and kids, $0.04.
[d] Includes some corn bread and hominy fed to dogs and chickens.
[e] Lima beans, snap beans, and cowpeas.

Of the food purchased, flour constitutes much the largest item, equaling 41.7 per cent of the total; sugar comes next with 18.4 per cent; the beverages (coffee, tea, cocoa, chocolate, postum) constitute 10.1 per cent; rice equals 6 per cent; and all other items make up the remaining 23.8 per cent.

Much has been said about the production of home supplies on the farm, and farmers are often urged to increase the proportion of the family food produced at home by growing more foods and buying less. But in this study it has been found that the ratio of food grown to that consumed is of less consequence than is the actual amount produced. However, in a tabulation made, but not presented here, there was found to be a certain relation between the percentage of family food produced at home and the farm returns as measured by

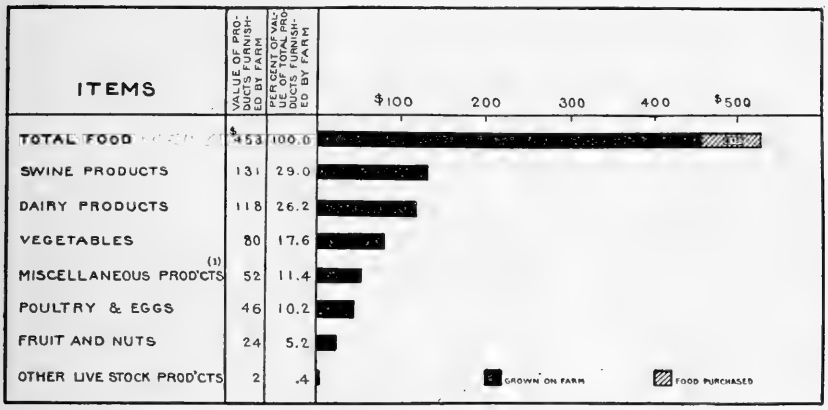

FIG. 13.—Value per farm of food products consumed in the home.

the farmer's earnings. Thus, the farmers growing less than 80 per cent of the food consumed had earnings 11 per cent lower than the average for farms of a similar size, while the similar return was 7 per cent above the average for those who produced more than 90 per cent of their own food. However, only 19 of the 106 farms fell in the former group, and only 28 in the latter, showing that the range of percentages was not so wide as would ordinarily be expected.

When the farms were grouped on the basis of the value of food grown at home the farmer's earnings and per cent return on the investment indicated considerably greater returns from the farms which furnished the more food. Thus, farms furnishing food to the value of less than $250 each gave gross labor incomes 19 per cent below the average, while returns were 44 per cent above the average on the farms supplying more than $600 worth of products.

When the farms were grouped on the amount of food furnished per person, tabulations showed much the higher returns from farms

supplying food to the value of from $75 to $100 per person than those furnishing either more or less than that range.

It would appear that the farmers who have produced the largest supply of family food at home have not thereby, on these farms, reduced the amount of food purchased. Rather, those who produced the most also purchased the most, since it is seen that the percentage of the total food bought is fairly constant. Those who produced the most food lived much better than those who produced less. The question of producing supplies at home seems, therefore, on these farms at least, to be not one of reducing the expense for purchased products, but it is rather one of a better standard of living.

CROPPING SYSTEMS.

In any region where economic conditions have been fairly uniform and operating over a considerable term of years, the type or types of agriculture tend to a stability of form that changes only in response to changes in the economic forces. Wide departures from practices that fit the economic factors at work are likely to lead to financial disaster to those persisting in them. The result is the automatic elimination of those continuing such wrong practices, and the eventual disappearance of the latter from the farming of the region. It will usually be found in an old established region that the average practices more or less closely approximate the best practice.

The proper selection of farm enterprises is a large factor in determining the success of the business. Of equal importance is the combining of these enterprises in the proportions that best fit the local conditions. Such a combination will be one that most efficiently employs the farm crew and equipment. Ordinarily, it will be one that distributes the labor, both man and work-stock, rather evenly throughout the year. But it is not to be assumed that under any set of conditions there is only one type of farming that may be safely followed, or that within the type there is not a certain range of choice in the selection of enterprises to be adopted and in the proportions in which these enterprises should be fitted together. In an area like Brooks County especially, with a growing season extending nearly throughout the year, and with a long list of crops adapted to the soil and climate, the choice is a rather wide one, largely dependent upon the abilities and inclinations of the individual farmer.

Much may be learned from a study of the average practices, and more especially of the practices which long experience has shown to be the ones best adapted to the region. This does not imply that the average practices are necessarily the best that could be devised. On the contrary, it will usually be found that they may be improved upon in important respects. Nevertheless, a study of the returns

secured when enterprises are combined in different proportions will help to show the proportions that are best adapted to the local conditions. Such a study has been made for the important crops found on the farms surveyed, and the results are presented in Table XVI. The index of earnings and the per cent returns on investment are the measures of efficiency used.

TABLE XVI.—*Relation of per cent of the crop area in specified crops to gross labor income and returns on investment (Brooks County, Ga.).*

Crop.	Per cent of crop land in specified crop.	Number of farms.	Average per cent crop land in specified crop.	Farmers' earnings.	Index of earnings.	Per cent return on investment.
Cotton	0	2	0	$372	$70	2.0
	0 to 10	10	7	553	90	3.2
	10 to 20	24	15	753	89	5.7
	20 to 30	25	25	1,112	128	7.7
	30 to 40	23	33	801	97	7.2
	40 and over	22	49	724	86	5.6
Corn	Under 30	19	26	852	93	6.4
	30 to 40	37	36	1,077	113	7.5
	40 to 50	24	44	756	92	5.9
	50 and over	26	57	474	92	4.8
Oats and rye	Under 5	22	2	635	92	7.9
	5 to 10	16	8	664	97	6.5
	10 to 20	27	15	872	112	6.9
	20 to 30	23	24	1,032	112	6.8
	30 and over	18	38	815	77	5.0
Cowpeas (for hay)	Under 5	39	1	638	90	5.3
	5 to 10	17	8	907	104	5.5
	10 to 15	33	12	904	103	6.8
	15 and over	17	22	963	111	7.8
Watermelons	Under 5	64	.5	749	97	5.7
	5 to 10	21	7.0	999	103	6.8
	10 to 20	14	14.0	854	111	7.4
	20 and over	7	29.0	797	91	6.3

Reference to Table XVI will show that the farms with from 20 to 30 per cent, or an average of 25 per cent, of the crop land planted to cotton, gave higher returns than did those with either a larger or smaller proportion than this. Thus, the farms with no cotton planted returned farmers' earnings amounting to $372. As the percentage of the crop land in cotton increased, up to 25 per cent, the farmers' earnings increased to $1,112. But a further increase in the proportion of land in cotton resulted in lower earnings, amounting to $724 for the group of farms with the largest proportion, or over 40 per cent of the land in cotton.

Expressed in another way, the farms with no cotton returned farmers' earnings amounting to but 70 per cent of the average of farms of a similar size. With increasing proportions of cotton planted, up to 25 per cent of the crop area, the returns increased to 28 per cent above the average, but decreased to 86 per cent with a still further increase in the proportion of cotton.

Measured in still another way, the "no-cotton" farms returned 2 per cent on the investment, while increasing the proportions of cotton gave increasing returns up to 7.7 per cent for the farms with one-fourth of the land in cotton. Further increase in the cotton area reduced the return to 5.6 per cent on the investment.

These results would indicate that where conditions are similar to those found on these farms at the time this survey was made, but with cotton figured at the normal 5-year price, the proper proportion of the crop land to be devoted to cotton to give the greatest farm profits is approximately one-fourth. Other farm-management surveys in the South have shown that in the areas represented more than one-fourth of the crop land should be planted to cotton to produce the largest profits. But such surveys have been made on types of soil heavier and better adapted to cotton than those in Brooks County. On such heavy soils, the maintenance of fertility by the growing of legumes, cover crops, etc., is not of such prime importance as it is on these lighter soils.

Corn is grown in Brooks County primarily as a feed for the live stock on the farm. However, a surplus is sold, the returns amounting to 5.6 per cent of the farm receipts. In a tabulation not shown, it was found that the farms getting from 1 to 5 per cent of the total receipts from the sale of corn were more profitable than those getting either a smaller or larger proportion from that source. This would indicate that sufficient corn should be planted to provide for all the farm needs. To insure this, a small margin of safety should be allowed, which will ordinarily mean a small surplus for sale. The proportion of land to be planted to corn, therefore, will be largely determined by the yield secured and the amount of live stock kept. The corn yields reported are rather low, but it should be remembered that the greater part of the corn grown is planted in alternate rows with peanuts. In considering, therefore, what area can profitably be devoted to this crop, due credit must be given to the pork produced by the accompanying peanut crop, as well as to the improvement in the soil fertility resulting from pasturing off the peanuts. The last-mentioned consideration is a very important one on these light soils.

In Table XVI tabulations similar to the one for cotton just discussed are also shown for the other important crops. The group of farms with from 30 to 40 per cent, or an average of 37 per cent, of the crop area in corn, gave considerably better returns, measured by both the farmers' earnings and return on the investment, than did those with either a greater or smaller proportion in that crop. This would indicate that approximately one-third of the crop area of these farms should be planted to corn. The cost-of-production data, to be discussed later, suggest that most of this corn should be grown with peanuts as an interplanted crop.

Oats are grown on these farms largely as a source of feed for live stock, especially work stock, as a winter cover crop, and to provide winter and spring pasture for hogs and cattle. It is also a source of cash sales, amounting on the average to 4.6 per cent of all farm receipts. On 25 of the farms the sales of this grain amounted to more than 5 per cent of the receipts. The cost records show that as a grain crop, oats, at the average yields obtained, returned but a narrow margin of profit, and the census data in the first part of this bulletin show that both the relative and actual acreage of the crop has been steadily decreasing in the county since 1880. Apparently it is not as a cash crop that oats should fill an important place on these farms, but rather as a source of farm feed and as a pasture and cover crop.

Referring again to Table XVI it is seen that the farms with from 10 to 30 per cent of the crop land in oats and rye together returned larger profits than did those with either a greater or a less proportion devoted to these crops.

Cowpeas are grown for hay on practically all these farms, and on one-third of them it is a source of cash sales. It is, in fact, the crop that furnishes the greater part of the hay grown. Approximately one-half of the acreage of oats and rye is followed by this crop, a proportion that is lower than that ordinarily found further north in the State. The lower proportion here is due to the heavy summer rains which often make the curing of this crop a difficult matter. The tabulation in Table XVI, however, indicates that the crop might with profit be grown more extensively than it is. The group of farms with the least of this crop planted returned the lowest profits, while the farms with the largest proportion of the crop land so planted got the highest returns.

The farms with from 10 to 20 per cent of the crop land planted to watermelons returned greater profits than did those with either more or less. However, this crop is a rather speculative one and too much dependence should not be placed upon such a tabulation.

Summarizing the results of the tabulations in Table XVI, it would seem that a cropping system adapted to the conditions on these farms at the time this survey was taken should divide the crop land approximately as follows: One-fourth to be planted to cotton, one-third to corn, 20 to 30 per cent in oats and rye to be followed by cowpea hay or a similar crop, and the balance to be planted to miscellaneous crops, the latter depending upon the individual tastes and inclinations of the farmer. The amount of oats, rye, and cowpeas to be grown should be governed by the amount of live stock kept. If many hogs are raised, most of the corn should be planted in alternate rows with peanuts, the latter to be hogged off.[1]

[1] For a further discussion of the crops grown on these farms, see pp. 53–57.

The above percentages of the crop area in the different crops are very close to the average for all of the farms studied, though there is a wide range in the proportions found on the different farms. Likewise, when the 25 farms showing the best returns are selected, it is found that the crop areas are divided in proportions very closely approaching those found to be the most profitable in the above tabulation.

Elsewhere it has been pointed out that since this survey was made the cotton-boll weevil has invaded the county, and it can not be doubted that the proper organization of the farms has been to a large extent changed thereby. Whether or not the proportion of land in cotton found by this study to be most profitable will continue to be so under boll-weevil conditions can not be answered by the data at hand. It is certain, however, that the cost and hazard of growing the crop have been greatly increased, especially in this immediate section, where the mild winters and heavy summer rainfall favor the work of the weevil considerably more than do conditions even a short distance farther north in the State. In other infested areas with similar soil and climatic conditions, but where cotton has been more exclusively relied upon as the source of the farm income, a reduction in the proportion of land in cotton will likely be necessary. To the farmers in such areas, this study of the diversified farms of Brooks County should be of considerable value.

TABLE XVII.—*Relation of swine raising to farm profits (Brooks County, Ga.).*

Number of hogs per 100 acres crop land.	Number of farms.	Average number of hogs per 100 acres crop land.	Index of earnings.	Per cent return on investment.
Less than 20	19	18.8	92	5.1
20 to 40	42	32.4	94	5.1
40 to 60	26	50.3	97	7.0
60 and over	19	74.1	124	8.6
All farms	106	41.8	100	6.2

The presence of the boll weevil in the region of this survey must mean for many of the farmers a reduction in the proportion of the land planted to cotton. The question of what to substitute for the cotton displaced is a serious problem, a partial answer to which is found in Table XVII. The farms have here been grouped on the basis of the number of hogs kept per 100 acres of crop land. The group of farms with less than 20 hogs per 100 acres returned earnings equal to but 92 per cent of those from farms of a similar size, but as the number of hogs increased the returns increased. The farms with more than 60 hogs per 100 acres, or an average of 74.1, gave earnings 24 per cent higher than the average. Likewise, the

returns on the investment increased from 5.1 per cent for the farms with the lowest relative number of hogs to 8.6 per cent for the farms with the most hogs.

In another table, not shown, there was found to be a close and direct relation between the percentage of farm receipts obtained from hogs and the profits from the year's business. It should be borne in mind that these results were obtained before the advent of the boll weevil, and that the farms heavily stocked with hogs were not the ones that grew the largest proportion of cotton. In the presence of the weevil, hog raising should offer still greater relative advantages in the form of profits.

FIG. 14.—Brooks County has long been noted for its production of hogs, an enterprise that, since the invasion of the boll weevil, is partly, and profitably, replacing cotton.

These results would seem to indicate clearly that in the production of swine one of the most profitable substitutes for cotton is to be found. Since this survey was made, the production of hogs in this part of the State has been increasing at a remarkable rate. The problem of the proper organization of farms for the production of hogs in this area is the subject of a separate study. (See fig. 14.)

COST OF PRODUCTION.

Results obtained by cost accounting on the farm should not be given a too literal interpretation. It will frequently be found that cost-accounting methods indicate that certain farm enterprises are being conducted at a loss, but it does not necessarily follow that such enterprises should be abandoned. On the other hand, such enterprises may add materially to the profits from the year's business. It may be found, for example, on a farm devoted principally to

the growing of cotton that the production of corn and oats cost more than the market prices of these crops. But a large part of the equipment and man and mule labor that must be maintained for the growing of cotton is used also in producing the other crops, and much of this use is at a time when the equipment and labor are not needed for the primary crop. The additional expense incurred when corn or oats, in this instance, are added to the cropping system may be very much less than the amount of the costs charged to these crops by the usual cost-accounting methods. It may also be found that the secondary crops grown do not materially, if at all, reduce the amount of cotton that can be grown with a given crew and equipment. The cost of producing any of the usual farm crops, therefore, should be considered with a proper view to the farm or cropping system as a whole, rather than from the standpoint of an independent crop.

To determine the costs of producing farm products by means of daily cost-accounting records is slow and expensive. The present study is an attempt to secure by the much quicker survey method, applying well-established cost-accounting principles, the costs and other factors that are ordinarily obtained only by accounting. It is believed that the much larger number of records that may be secured by this method sufficiently neutralize any sacrifice in minute accuracy of details in individual records. The larger number of records that may be obtained greatly increases the number of problems that may be studied.

The essential feature of the method here used is that the overhead costs of the farm business are distributed among all of the productive enterprises[1] in proportion to the amount of labor expended on each. The total costs for the farm of man labor, work-stock labor, annual cost of equipment, and interest on the cash required to operate the business are determined separately. All other items of cost are charged directly to the enterprises to which they apply.

The total number of days of productive man labor expended on the farm for the year is determined. This total is divided into the total cost of man labor to ascertain the cost of each day of productive labor. To determine for any crop the acre cost of man labor, this cost per day is multiplied by the number of days of man labor expended on an acre of that crop. The per acre share of the interest

[1] The term *productive enterprise* is used in this investigation to designate all crops, live stock, or other source of income that add directly or indirectly to the gross farm income. *Productive labor* of man or work stock includes all labor applied directly to a productive enterprise. It does not include such labor as repairing buildings, fences, terraces, and ditches, or the care of work stock. The amount of productive labor devoted to each enterprise was determined by individual estimates from each farmer, the estimates being made in detail by separate operations, and later reduced to terms of man days and mule days per acre of crop, or unit of other product.

on cash to operate the farm is determined in the same way. Likewise, the cost of work stock and of implements and machinery are distributed in a similar manner, but on the basis of the amount of mule labor expended on each enterprise. By this system the productive enterprises of the farm carry the entire overhead charge of the business. The costs of all crops grown by the wage system have been kept separate from the costs of those grown by the cropper system. For the latter the costs of the labor are considered from the point of view of the two parties to the system and not from that of the farm operator alone.

LAND RENT.

The land-rent charge against the crops was based upon the farmer's estimate of the amount that the crop land would return in the form of cash rent or its equivalent. When only a single crop occupied the land during the year, that crop bore the entire annual rent charge, and when more than one crop was grown the charge was in most cases divided evenly between them. However, in the case of corn and peanuts planted together, 63 per cent of the rent was charged to the corn and 37 per cent to the peanuts, for reasons explained later.

FERTILIZERS.[1]

The fertilizer charge includes all commercial fertilizers, cottonseed, cottonseed meal, and stable manure applied. Stable manure is charged at the estimated value in the lot, which usually amounts to $1 per load, and all other materials at the price paid or the market value. The costs of hauling from the shipping point and to the field are included under the labor charges.

MAN LABOR.[2]

Included in the man-labor charge are the cash wages paid and the value of rations furnished to all hired labor; the estimated value of the farmer's labor, the cropper's labor, and all family labor; as well as the perquisites furnished to each of these in the form of wood (uncut) and the renting value of the garden and house lot. It was assumed that the rent charge for the crop land covered the use of the buildings thereon. The relative and actual costs of the different elements of man labor are shown in figure 15, the figures given in every case including the perquisites. The cost of the operator's labor includes all supervision as well as the manual labor performed. All of the operator's labor charge against the cropper system consists of recompense for supervision. The cost given for cropper labor represents the amount that the croppers would receive in the form of wages for performing the same amount of labor. This differs from the item of cropper labor as given under current expenses. (See p. 16.)

[1] For a detailed discussion of fertilizers applied see pp. 30–32.
[2] For a discussion of the labor systems see pp. 16–19.

The operator's labor was the largest item in the total labor cost, equaling 38 per cent of the latter, followed in order by the cash-paid labor, the unpaid family labor, and the cropper labor. On the average, there were 926 days of productive labor expended per farm, of which 570 days were devoted to the wages crops and 356

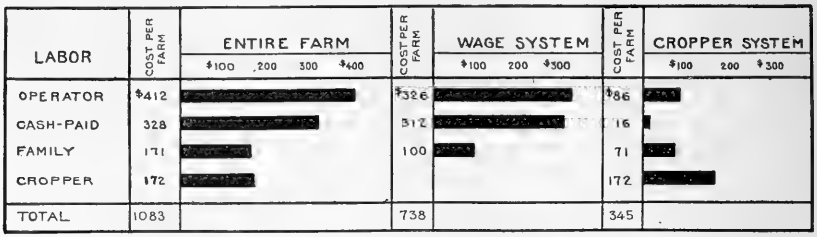

FIG. 15.—Cost of man labor per farm, for the farm as a whole, and for the wage and cropper systems separately.

days to the cropper crops. The average cost per day of the productive labor was $1.20.[1]

The man-labor charge was by far the largest item in the cost of producing crops, amounting to 40.4 per cent of the latter.

WORK-STOCK LABOR.

The second largest item in the cost of crop production is work-stock labor, which accounted for 19.2 per cent of the total cost. In calculating the cost of work-stock labor the items considered were feed, depreciation, interest on present value, shoeing, veterinary charges, and losses from injuries. It was assumed that the value of the manure produced was offset by the cost of water, taxes on the work stock, and interest, taxes, and insurance upon the feed. The labor of caring for work stock was considered as nonproductive; hence, by this system of cost determination, the cost of such labor is automatically distributed among all the productive enterprises on the farm. The stable charge is assumed to be covered by the rent of the crop land.

These farms maintained an average of 4.4 head of productive work stock, three-fourths of which consisted of mules. The average values at the beginning of the year were $152 per mule and $145 per horse, or an average of $150 per head of work stock. The average cost of keeping a horse or mule for the year amounted to $115.46, the items of which are shown in figure 16. Three-fourths of this cost consisted of feeds, and 59 per cent of the feed cost consisted of corn. Hay made up about 20 per cent of the feed cost, corn fodder 8 per cent, oats nearly 12 per cent, and all other feed 1.5 per cent. The latter consisted of green feed, mostly sorghum and pasture. Most of the oats were fed in the sheaf.

[1] Unweighted average.

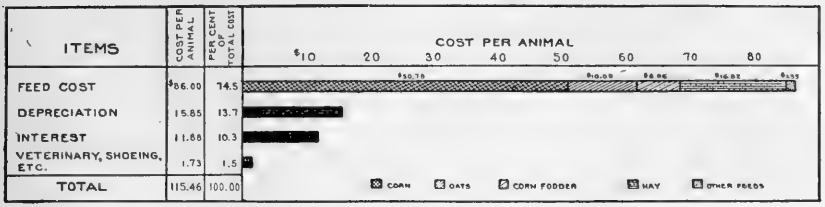

FIG. 16.—Annual cost of work stock per animal.

The depreciation on work stock accounted for 13.7 per cent of the annual cost, or 10.6 per cent of the average value per head. This means that the average remaining working life was 9.5 years.

With the average work animal on these farms, 31 acres of crop land were cultivated and 113 days of productive labor were performed, the latter at a cost of $1.07 [1] per day of such labor.

EQUIPMENT COST.

The present value of the implements and machinery on these farms amounted to $330 per farm, or $2.28 per acre of crop land. The annual charge against this equipment is the sum of the depreciation, repairs, interest, taxes, and insurance, minus the receipts from implements hired out. This charge, the items of which are shown in figure 17, amounted to $103.47 [2] per farm, or $0.71 per acre of crop land. This sum equals 31.4 per cent of the present value of the equipment and 4 per cent of the total cost of crop production. As explained elsewhere, the equipment charge was distributed among the productive enterprises on the farm in proportion to the amounts of mule labor expended on each. The charge amounted to 21 cents for each day of productive mule labor.

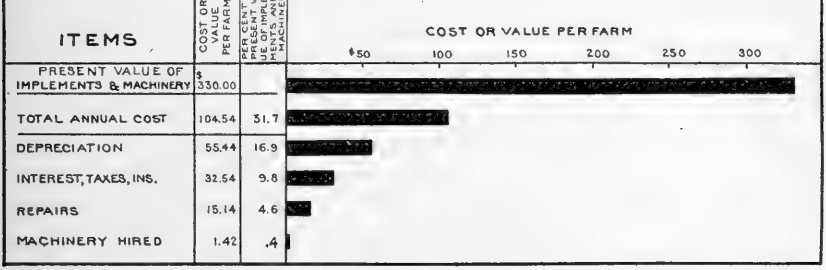

FIG. 17.—Present value and annual cost per farm of implements and machinery.

The item of depreciation includes more than half of the annual equipment cost, or 16.9 per cent of the present value of the imple-

[1] This cost is the average per day per farm, whereas the costs given in figure 16 are averages per animal.

[2] The total annual cost, $104.54, shown in figure 17, represents the gross cost. Subtracting the receipts from machinery hired out, $1.07, leaves $103.47 as the net cost per farm.

ments and machinery. This means that in its present condition the equipment will have an average life of approximately six years. Interest, taxes, and insurance amount to about 10 per cent of the value of the equipment, and repairs slightly less than half of that amount.

PRODUCTIVE WORK UNITS.[1]

For the purpose of distributing the labor costs among the different crops and other enterprises by the method here used, it was necessary to ascertain the amount of man and work-stock labor expended on each. This was determined for and applied to each enterprise on each farm separately. The average number of days of productive labor required per acre of each of the principal crops is given in Table XVIII. Since there is a close relation between crop yields and amount of labor required, the average yields are also shown.

TABLE XVIII.—*Productive days of man and mule labor expended per acre and average yields of the principal crops (Brooks County, Ga.).*

Crop.	Number of records.	Average days productive labor per acre.		Average yield per acre.
		Man labor.	Mule labor.	
Cotton, Upland [a]	143	13.91	5.03	299 pounds lint.
Cotton, Sea Island [a]	6	16.39	5.20	214 pounds lint.
Corn (solid)	61	3.32	3.12	14.3 bushels.
Corn (planted with peanuts) [a]	120	2.50	2.00	71 pounds fodder. 12.4 bushels. 84 pounds fodder.
Peanuts harvested (solid)	15	23.10	2.92	37 bushels.
Peanuts harvested (in corn)	5	19.43	1.10	29 bushels.
Peanuts "hogged-off" (solid) [a]	53	3.33	2.67	(b)
Peanuts "hogged-off" (in corn) [a]	118	1.90	1.21	(c)
Oats	80	1.34	1.88	16.2 bushels.
Oat hay	15	1.50	1.70	831 pounds.
Rye	12	1.18	1.89	7.9 bushels.
Rye or oats, pastured	23	.55	1.12	
Cowpea hay	65	1.92	2.05	1,092 pounds.
Sorghum silage	4	6.72	6.80	14 tons.
Watermelons	46	5.36	5.00	0.5 carload.
Sweet potatoes (harvested)	25	10.33	4.99	108 bushels.
Sweet potatoes (hogged-off)	19	5.82	2.85	
Irish potatoes	4	5.88	3.82	69 bushels.
Sugar cane	24	26.24	14.40	307 gallons sirup.

[a] Includes both wage and cropper crops. [b] 0.71 bushel of seed picked. [c] 0.33 bushel of seed picked.

The relationships of the various elements of cost, yields, and other factors to the different phases of farm organization and efficiency have already been considered elsewhere. In the following pages, therefore, are presented only details of costs that have not been previously discussed.

[1] A work unit is an average day's work.

TABLE XIX.—*Costs per acre and per unit of crops grown by wage system (Brooks County, Ga.).*

	Cotton (Upland).	Cotton (Sealsland).	Corn (solid).	Corn (with peanuts).	Oats (thrashed).	Oats (fed in sheaf).	Rye.	Watermelons.	Sugar cane.	Sweet potatoes.
Number of records	91	3	47	77	49	31	12	46	15	25
Cost per acre:										
Land rent	$3.05	$3.00	$2.86	$1.90	$2.09	$2.17	$2.08	$2.93	$3.45	$3.22
Man labor	17.70	19.82	4.10	3.21	1.91	1.71	1.69	7.22	36.39	13.30
Mule labor	5.53	5.63	3.14	2.21	1.86	1.90	1.85	4.92	14.12	5.14
Implement cost	1.07	1.15	.63	.44	.38	.38	.38	.98	2.88	1.10
Interest on cash	.35	.68	.07	.06	.05	.03	.03	.15	.70	.21
Seed	.43	.23	.11	.07	.82	.84	1.42	.55	10.91	2.16
Fertilizer	4.76	4.11	1.88	1.46	.46	.33		7.73	7.12	4.76
Special costs	[a] 1.62	[a] 2.40			[b] .15	[b] .07	[b] .08	[c] .40	[d] 6.41	
					[e] .96		[e] 1.09	[f] .25	[g] 3.94	
					[h] .03			.22		
Totals	34.51	37.02	12.79	9.35	8.71	7.43	8.62	25.35	85.92	29.89
Credits					[j] .41	[j] .03	[j] .08	[j] .26		
Net acre costs	34.51	37.02	12.79	9.35	8.30	7.40	8.54	25.09	85.92	29.89
Value per acre	41.34	41.68	11.45	10.18	8.93	8.67	15.45	28.90	105.84	63.70
Profit per acre	6.83	4.66	[k] —1.34	.83	.63	1.27	6.91	3.81	19.92	33.81
Major product	Lint.	Lint.	Corn.	Corn.	Grain.				Sirup.	
Yield	[l] 316	[l] 228	[m] 14.6	[m] 12.7	[m] 17.5	[m] 14.2	[m] 7.86	[n] .5	[o] 307	[m] 109
Cost per unit	$0.0928	$0.137	$0.83	$0.67	$0.47	$0.52	$1.09	$50.18	$0.24	$0.28
Minor product	Seed.	Seed.	Fodder.	Fodder.	Straw.				[p] Cane.	
Yield in pounds	[l] 644	[l] 641	[l] 62.9	[l] 79.1	[l] 23					
Cost or value per ton	$16.08	$18.26	$20.00	$20.00	$10.00					

TABLE XIX.—*Costs per acre and per unit of crops grown by wage system (Brooks County, Ga.)*—Continued.

	Irish potatoes.	Peanuts harvested.		Cowpea hay.		Oat hay.	Crops pastured.			
							Peanuts.		Oats, rye.	Sweet potatoes.
		Solid.	In corn.	Baled.	Not baled.		Solid.	In corn.		
Number of records	4	15	5	45	20	15	49	76	23	19
Cost per acre:										
Land rental	$5.00	$3.13	$1.36	$1.54	$1.86	$1.94	$2.76	$1.28	$1.88	$3.02
Man labor	6.76	27 50	28.03	2.78	2.21	1.75	4.57	2.39	.96	7.24
Mule labor	4.73	2.62	1.00	2.17	2.00	1.97	2.54	1.37	1.05	2.73
Implement cost	1.26	.96	.24	.49	.41	.35	.54	.26	.25	.66
Interest on cash	.20	.32	.26	.06	.10	.02	.08	.05	.01	.20
Seed	8.22	1.28	.92	2.02	2.28	.82	1.19	.68	1.43	1.64
Fertilizer	10.58	.80	.48	.14	.44	.18	.15	.07	.08	4.04
Special costs	*q* .62			*h* .28		*h* .02				
Totals	37.37	36.61	32.29	9.48	9.30	7.05	11.83	6.10	5.66	19.53
Credits					*r* .06		*r* .74	*r* .40	*s* .26	
Net acre costs	37.37	36.61	32.29	9.48	9.24	7.05	11.09	5.70	5.40	19.53
Value per acre	81.04	40.21	32.27	10.78	9.25	7.64				
Profit per acre	43.67	3.60	*k*—.02	1.30	.01	.59				
Major product:										
Yield	*m* 69	*m* 37	*m* 29	*t* 57	*t* 0.5	*t* 0.42				
Cost per unit	$0.55	$0.99	$1.12	$16.72	$18.58	$16.97				

a Ginning, bagging and ties.
b Twine.
c Special car loader.
d Barrels.
e Thrashing toll.
f Car bedding.
g Wood fuel.
h Baling wire.
i Paper, nails, and slats.
j Pasture.
k Loss.
l Pounds.
m Bushels.
n Car.
o Gallons.
p Mainly seed cane.
q Sacks.
r Seed picked
s Grain harvested.
t Tons.

All calculations of cost of crop production have been based upon an acre as the unit. In Table XIX the itemized acre costs, yields, values and profits, and the cost per unit of each product are shown in detail for all the important crops grown by the wage system; and the same data for the crops grown by the cropper system are given in Table XX, the costs to the cropper and to the farm operator being shown here separately. The cropper's share of the costs consists mainly of labor, that of himself and his family, and a small amount hired, followed in order by his share of the costs of fertilizer, gin-

FIG. 18.—For many years peanuts have been grown extensively in Brooks County, principally as a crop to be "hogged off". Only sufficient seed was harvested for planting purposes and a few cash sales. Nearly all of this was "picked" by the slow hand method here shown.

ning, bagging and ties, interest on cash, and planting seed. The operator's costs consist principally of mule labor, his own labor of supervision, land rent, and fertilizers, while of lesser and decreasing importance are the equipment cost, ginning, bagging and ties, seed, and interest on cash. The cost of the operator's supervision amounts to a little less than half as much as that of the manual labor, all of the latter being furnished by the cropper.[1]

[1] The terms of the cropper's contract, the relative yields and costs to each party, and the relative yields and costs by the two systems are discussed in the first part of this bulletin.

TABLE XX.—*Costs per acre and per unit of crops grown by cropper system (Brooks County, Ga.).*

	Cotton (short staple).		Cotton (Sea Island).		Corn (solid).		Corn (with peanuts).		Peanuts (solid, pastured).		Peanuts (in corn, pastured).	
	53 records.		3 records.		14 records.		43 records.		4 records.		42 records.	
	Cropper.	Operator.	Cropper.	Operator.	Cropper.	Operator.	Cropper.	Operator.	Cropper.	Operator.	Cropper.	Operator.
Cost per acre:												
Land rent		$3.24		$3.67		$3.18		$1.92		$2.50		$1.30
Man labor	$9.95	3.95	$11.87	6.66	$2.72	.99	$1.86	.75	$2.38	1.14	$1.54	.63
Mule labor		4.52		6.25		2.56		1.85		2.70		1.18
Implement cost		.98		.85		.56		.42		.42		.28
Interest on cash	.31	.01	.39		.08	.01	.06		.06		.05	
Seed	.15	.31	.25	.25	.03	.10	.01	.10	.12	.77	.37	.29
Fertilizer	1.76	1.88	2.60	2.60	.69	.69	.75	.82			.02	.01
Ginning, bagging, and ties	.66	.70	1.06	1.07								
Total cost per acre	12.83	15.59	16.17	21.35	3.52	8.09	2.68	5.86	2.56	7.53	1.98	3.69
Credits											[a].24	[a].03
Net cost per acre	12.83	15.59	16.17	21.35	3.52	8.09	2.68	5.86	2.56	7.53	1.74	3.66
Value per acre	16.80	17.07	19.62	19.62	5.11	5.11	4.74	4.74				
Profit or loss per acre	3.97	2.48	3.45	[b]—1.73	1.59	[b]—2.98	2.06	[b]—1.12				
Major product	Lint.	Lint.	Lint.	Lint.	Corn.	Corn.	Corn.	Corn.				
Amount of yield received by cropper and operator	[c]136	[c]136	[c]110	[c]110	[d]6.34	[d]6.34	[d]5.79	[d]5.78				
Cost per unit	$0.080	$0.097	$0.123	$0.162	$0.48	$1.20	$0.38	$0.93				
Average cost by cropper system	$0.089		$0.143		$0.84		$0.66					
Minor product	Seed.	Seed.	Seed.	Seed.	Fodder.	Fodder.	Fodder.	Fodder.				
Amount of yield received by cropper and operator	[c]255	[c]280	[c]262	[c]262	[c]50	[c]50	[c]45.8	[c]45.8				
Cost or value per ton	$15.08	$16.72	$19.78	$26.20	$20.00	$20.00	$20.00	$20.00				
Average cost per ton by cropper system	$15.94		$23.00									

[a] Value of seed harvested. [b] Loss. [c] Pounds. [d] Bushels.

COTTON.

Slightly more than half of the cost of producing cotton consists of man labor, followed in order by mule labor, fertilizer, and land rent.

The cost of growing cotton was divided between the lint and seed in proportion to the relative values of each. Substituting the average 5-year price of lint for the price received in 1914, for reasons previously explained, the value of the short staple lint was found to be 85 per cent of the total value of the lint and seed taken together. Therefore, 85 per cent of the cost of growing the crop was charged to the lint and 15 per cent to the cotton seed. The average cost of

FIG. 19.—Field of Spanish peanuts ready for thrashing. The recent high prices offered for peanuts by the oil mills have greatly stimulated the production of that crop for the market.

net lint[1] grown by the wage system is 9.3 cents per pound, which reduced to gross lint[1] equals 8.9 cents per pound. The cropper cotton costs 8.9 cents per pound of net lint to produce, which is equivalent to 8.5 cents per pound of gross lint. Since the cotton yield for the season of 1914 was somewhat higher than normal, these costs may be slightly lower than the average for a series of years.

In certain years a considerable acreage of Sea Island cotton is planted in Brooks County, but in 1914 the amount grown was comparatively unimportant. The number of records obtained are not sufficient to give a reliable average for this class of cotton, but the results are shown in the table for comparative purposes.

[1] By *gross lint* is meant the weight in the bale, including bagging and ties. By *net lint* is meant the gross lint minus the bagging and ties. Except where otherwise stated, the term "lint" is used throughout to denote net lint. The average weight of bales was 510 pounds, of which 23 pounds consisted of bagging and ties.

CORN AND PEANUTS.

Since corn and peanuts are commonly grown on the same land, the costs of these two crops will be considered together. Slightly more than two-thirds of the acreage of corn on these farms is planted in alternate rows with peanuts. Corn grown by itself, or "solid," is planted in rows usually 4.5 feet apart, but when the two crops are planted together the distance between the rows of corn is increased to 6 feet or more. There is some difference of opinion among the growers as to whether this widening of the rows results in the lowering of the yield of corn. The tabulated results, however, show that it does lower the yield to the extent of 15 per cent. But growing the

FIG. 20.—With the increased production of peanuts for the market many power "pickers" have been introduced. The straw is baled and used for feed.

two crops together results in distinct economies of labor and use of land, which much more than offsets the somewhat lower corn yield. Corn grown alone costs 83 cents per bushel to produce by the wage system, and 84 cents by the cropper system, whereas corn grown with peanuts cost 67 and 66 cents per bushel, respectively. An acre of peanuts in corn, it was found, costs approximately one-half as much as an acre of peanuts planted alone. These costs indicate that the local practice of growing the two crops together is an excellent one.

The costs of growing the two crops when planted together can not be divided on the basis of the respective values of each, since peanuts are nearly all pastured off, and as pasture they do not have a definitely measurable commercial value. Therefore, all costs that clearly could be charged to either of the crops separately were so entered. But the few mutual costs, such as the breaking of the land, and land

rent, which could not be directly separated, were divided between the two crops in the proportion of 63 per cent to the corn and 37 per cent to the peanuts. This division is based on the assumption that an acre of the combination crop is equal to 50 per cent of a full acre of peanuts and 85 per cent of an acre of corn. The ratio between these percentages is approximately 37 to 63. It is universally held by farmers in Brooks County that 2 acres of peanuts planted in alternate rows with corn are in every respect equal to 1 acre planted "solid"; and it was found that the corn yield when the two crops are planted together equals 85 per cent of the yield secured from corn planted alone.

Peanuts are grown on these farms primarily to furnish pasture for hogs, only sufficient seed being harvested to replace the seed planted and to furnish a small surplus for consumption in the home and for sale. The harvesting is therefore done on a small scale and hence is nearly all hand labor, resulting in a rather high cost of production for the peanuts picked. (See fig. 18.) Had harvesting been done on a scale sufficient to warrant the use of harvesting machinery, the cost per bushel would have been considerably lower than shown in the tables. When peanuts were gathered from areas used mainly for pasture, the value of the seed saved was deducted from the total cost and the remainder entered against the hogs as a pasture charge. Since this survey was made the increased market price for peanuts has greatly stimulated the production of this crop as a source of cash receipts. (See figs. 19 and 20.)

Only a part of the corn fodder produced on these farms is harvested, and that part represents such a small percentage of the value of the whole crop that it is here treated as a by-product, the value of the fodder gathered being deducted from the total cost of growing the crop, and the balance charged to the grain.

OATS.

Oats are grown on almost every farm as a source of feed for work stock, and on nearly half of them oats served as a source of revenue. On many they were grown for a winter cover crop and to furnish winter and spring pasture for hogs and cattle. Much of that fed to work stock is fed in the sheaf.

RYE.

Rye is grown on a considerable proportion of these farms, but mainly as a cover and pasture crop. On several farms the grain is harvested and sold locally for seed purposes. The yield is low but the price is high, nearly $2 per bushel, resulting in a wide

margin of profit per bushel. As a grain crop, rye is very uncertain on this light, sandy soil, but it fills an important place as a cover and pasture crop.

COWPEA HAY.

Cowpeas are frequently difficult to cure for hay in this region, owing to rains during the period in which this crop matures. For this reason, the crop is not so commonly planted here as it is but a short distance farther north in the State. One-half of the area of oats and rye for grain is followed by a crop of cowpeas. One-third of the farms reported receipts from the sale of cowpea hay. The yield reported was low, averaging a little more than one-half ton to the acre. For purposes of determining costs, the crops baled were kept separated from those unbaled, the respective costs per ton of hay in the barn being $16.72 and $18.58. The difference in cost in favor of the crop bales was undoubtedly due largely to the difference in yields. Higher yields would unquestionably have given correspondingly lower costs per ton.

WATERMELONS.

Brooks County is in the center of an important area for the production of watermelons for shipping to northern markets, and on nearly half of the farms studied this crop is an important source of income. The fertilizer charge is the largest single item of cost, closely followed by that for man labor. It is usual for a professional car loader to pack the melons in the cars at a fixed rate per car. This cost is entered as "special carloader," instead of being included under costs of man labor. The material used for bedding the cars is mainly pine needles or oats or rye straw, the local value of which is nominal, and the cost of hauling which is included under the labor charges. The paper, nails, and slats charged are for lining and closing the cars. After the crop is harvested, cattle and hogs are usually allowed to graze off the cull melons and the growth of crab grass. The estimated value of such pasturage has been deducted from the gross cost as a pasture credit. Often a crop of cowpea hay follows the melons, in which case the former shares its proportionate part of the land-rent charge. The net cost of this crop amounts to $25.09 per acre, or $50.18 per carload. Nearly all the melons are bought on the loaded car at the shipping point, and the costs shown are figured at that point.

The average yield of half a carload per acre was normal, but the market price declined in the middle of the harvesting season to so low a point that a part of the crop was not gathered. The costs given in the table represent crops harvested and do not include the

cost of merchantable melons left in the field. When the cost is computed for the entire acreage of melons grown on the 46 farms, the cost per acre amounts to $22.17, or $58.32 per carload of melons harvested and sold.

SUGAR CANE.

Sugar cane is grown on every farm to produce sirup for home use, and on two-thirds of the farms it serves as a source of farm sales. The sirup is usually sold in barrels to the local merchants, who ship much of it out of the county. The average price received in the barrel during 1914 was 26 cents per gallon. The costs shown herein represent the cost of the growing of the crop, grinding, evaporating, and putting in barrels on the farm.

This crop is a very intensive one, requiring a large amount of labor per acre. Man labor is by far the largest item of cost, followed by mule labor, seed cane, and fertilizer. A considerable part of the latter consists of stable manure. The wood fuel used in evaporating the sirup is cut on the farms, and the labor of cutting and hauling the wood is included in the labor charges. The value of the seed cane saved and the small amount of canes sold or consumed on the farm has been deducted from the total cost, and the balance charged to the sirup, making the average cost 24 cents per gallon. The costs represent small scale production, but the profit per acre is fairly large. This crop can be grown at a comparatively low cost per unit of product, the chief problem being one of marketing the product.

SWEET POTATOES.

Sweet potatoes are grown in Brooks County only on a small scale, mainly for home consumption and for hog pasture. Nearly half of the cost of growing the crop is chargeable to man labor, the next largest items being mule labor, fertilizer, and land rent. The acre cost of the crop for hog pasture is $19.53 as compared with $29.89 for the crop harvested and put in the "banks," the difference being the cost of gathering. The average yield was 109 bushels and the cost per bushel 24 cents. These costs represent small scale production and not growing on a commercial basis. The margin of profit is wide and it would seem that the crop offers opportunities for commercial production, provided a market can be found for the product.

IRISH POTATOES.

Only four farms were found growing Irish potatoes primarily for marketing. The yield secured was 69 bushels per acre. The costs amounted to $37.37 per acre and 55 cents per bushel in sacks on the farm. At the price received, about $1.19 per bushel, the margin of profit is the widest found of any of the crops grown on these farms.

COST OF FEEDING CATTLE.

An increasing number of farmers in Brooks County are making a practice of fattening cattle for the market. Many of the feeders are shipped in from Florida. Others are purchased from farmers within the county or raised on the farms on which they are fed. Three such cattle feeders were included in the survey, and the itemized costs of feding are shown in Table XXI.

TABLE XXI.—*Cost of feeding cattle on 3 farms (Brooks County, Ga.).*

Number of cattle fed, 378; number of pounds gained, 62,070.

Item.	Cost.
Man labor (208.5 days)	$345.31
Mule labor (323 days)	292.91
Equipment cost	55.46
Cottonseed meal (140 tons)	3,155.00
Cotton hulls (122.2 tons)	625.00
Hay (3 tons)	30.00
Silage (corn and sorghum) (132 tons)	[a] 506.47
Pasture [b]	220.00
Bedding [c] (125 loads)	30.00
Dipping, dehorning	27.00
Interest	327.31
Taxes	27.00
Gross cost	5,641.46
Manure credit (1,120 loads)	1,120.00
Net cost of gains	4,524.46
Cost of cattle at beginning of feeding period	7,612.00
Cost of cattle at end of feeding period	12,136.46
Price received f. o. b. Quitman	12,091.00
Loss	45.46
Cost per 100 pounds of gain (weight at Quitman)	7.29

[a] Charged at cost of production.
[b] 123 head for 2 months and 200 head for 3½ months.
[c] Oats, rye, and pine straw. Cost of hauling included under labor charges.

The 378 cattle fed gained 62,070 pounds, or 164 pounds per head, at a gross cost of $9.09 per hundredweight. Deducting the value of the manure, estimated at $1 per wagonload in the feed lot, gives a net cost of $7.29 per hundredweight. On one farm the cattle gained 200 pounds per head, at a cost of 6.1 cents per pound, and returned a profit of $4.74 each; on another the gains were 150 pounds per head, at a cost of 8.9 cents per pound, resulting in a loss of $5.46 per head; while on the third farm the cattle gained 112 pounds each, at a cost per pound of 9.6 cents, and netted a loss per animal of $5.66. The cattle were sold when the foot-and-mouth quarantine was in effect and the market depressed; hence normally a better showing in the matter of profits could be expected.

The cost of cottonseed meal and hulls constitutes nearly 84 per cent of the total feed cost. The silage fed is charged at the cost of production, since it has not here a recognized definite value. But all other feeds are charged at the prices on the farm or at the point of purchase. The labor charge includes the labor of buying the cattle, hauling feed from shipping point, feed and care of the cattle,

and marketing. The total costs are figured at f. o. b. the shipping point, Quitman.

COST OF SWINE PRODUCTION.

On 55 of the 106 farms surveyed hogs were raised in sufficient numbers to justify the calculations of cost of production. The itemized costs on these farms are shown graphically in figure 21, and in detail in Table XXII.

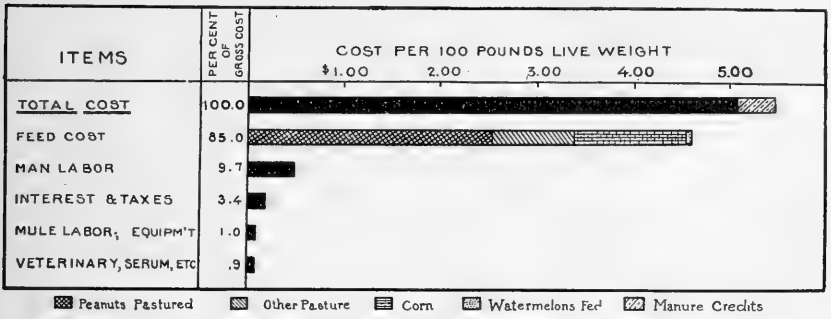

FIG. 21.—Cost of swine production.

It will be seen by the table that of the gross cost of producing hogs, one-half is accounted for by the cost of peanuts pastured, two-thirds by all crops pastured, and 85 per cent by all classes of feeds. The peanuts, oats, rye, and sweet potatoes fed were all pasture crops and have no definite commercial value, hence are charged at the cost of production. All other pasture is entered at the estimated renting value. Corn is charged at the farm price.

TABLE XXII.—*Cost of swine production on 55 farms (Brooks County, Ga.).*

Number of hog units [a] per farm, 77; pounds of live weight gains per farm, 11,033.

	Cost per farm.	Cost per 100 pounds live weight.	Per cent of gross cost.
Peanuts, pastured (32 acres) [b]	$309.34	$2.80	51.2
Oats and rye, pastured	26.03	.23	4.3
Sweet potatoes, pastured (2.24 acres) [b]	19.80	.18	3.3
Woods pasture	9.78	.09	1.6
Other pasture	10.70	.10	1.8
Total pasture cost	375.65	3.40	62.2
Corn (173 bushels)	129.40	1.17	21.4
Watermelons, fed	8.43	.08	1.4
Total feed cost	513.48	4.65	85.0
Man labor (41 days)	58.60	.53	9.7
Mule labor (5.1 days)	5.02	.05	.8
Equipment	1.13	.01	.2
Veterinary, serum, dips, medicine	5.50	.05	.9
Interest	19.62	.18	3.3
Taxes	.82	.01	.1
Gross cost	604.17	5.48	100.0
Manure credit	40.85	.37	6.8
Net cost	563.32	5.11	.....
Net cost on 45 farms with no losses from cholera	.....	4.73	.....

[a] See footnote, p. 60, for definitions. [b] Charged at cost of production.

Next to feeds, the largest item of cost is that of man labor, equaling nearly 10 per cent of the gross costs, followed by the interest charge, and others of minor importance. The average number of hog units[1] on each farm was 77 and the cost per pound of live-weight gain[2] was 5.1 cents. Ten of these 55 farms suffered losses from hog cholera, which, of course, increased the cost per pound of the remaining hogs. On the 45 farms free from such losses the average cost per pound was 4.7 cents.

The manure credit that has been deducted from the gross cost represents the estimated value of the residual fertilizing effect of the peanuts pastured off by the hogs. It is the consensus of opinion held by these farmers, based on experience, that the peanut crop grown and harvested from the soil is as severe a drain on soil fertility as is the growing of a crop of corn. Manifestly, then, any fertilizing value of peanuts "hogged off" is the value due to the method of harvesting, and as such should be a credit to the hogs and not to the peanuts. The average of a large number of estimates[3] places this fertilizer value due to the method of harvesting at $1.50 per acre of "solid" peanuts "hogged off," and at 75 cents per acre of peanuts and corn. Upon this basis the credits to the hogs have been calculated and entered as a manure credit.

Of special significance is the large proportion of the cost represented by pasture crops, especially peanuts. Undoubtedly herein lies the secret of profitable swine production in Brooks County.

Cost of slaughtering and curing swine.—It has long been the practice of the farmers of Brooks County to slaughter their hogs at home. Recently, however, a packing plant has been erected in an adjoining county, affording a ready market for live stock. Since the farmers now have the choice of selling their hogs on foot or of doing the slaughtering at home and marketing the resulting products, it is of interest to know the cost of killing and curing at home. These costs are shown in Table XXIII. On the farms that killed an average of 2,764 pounds of live hogs the cost amounted to 87 cents per hundred pounds of live weight, but on the farms that slaughtered 16,395 pounds each the cost was reduced by nearly one-half, or to

[1] A hog unit is a mature hog maintained on the farm during the year, or the equivalent of a 200-pound hog grown during the year. Immature hogs slaughtered or on hand at the end of the year were reduced to hog units by dividing the total live weight by 200 pounds.

[2] The live-weight gain includes the weight of all hogs sold and slaughtered, and any differences in the weights of all hogs on the farms at the beginning and ending of the farm year.

[3] In getting these estimates the farmers were asked, first, how much more rent they would be willing to pay for the use of Brooks County land on which either peanuts or peanuts and corn had been grown the previous year than they would for similar land that had produced a crop of corn; second, how much less fertilizer, measured by value, they would apply to a crop of cotton planted on land that had produced peanuts or peanuts and corn than on land following corn. The replies gave a wide range of estimates, the average of which is given above.

46 cents per hundred pounds. The average cost was 54 cents. This does not include the marketing of the meat, but it does include the hauling of the ice, salt, etc., to the farm. It represents the cost of the meat cured ready to sell.

TABLE XXIII.—*Cost of killing and curing swine (Brooks County, Ga.).*

	Average of all farms.	Farms having each specified number of pounds of swine (live weight) killed per farm.			
		Less than 5,000 pounds.	5,000 to 7,000 pounds.	7,000 to 10,000 pounds.	10,000 pounds and over.
Number of farms	50	14	10	12	14
Average per farm:					
Live weight killed (pounds)	8,438	2,764	5,446	8,266	16,395
Number of hogs killed	47.2	21	33.7	48	83
Average weight per hog killed (pounds)	179	132	161	172	193
Man labor (days)	18.01	10.1	13.5	20.3	27.1
Mule labor (days)	1.57	.40	.82	1.4	3.5
Cost of man labor	$23.51	$13.58	$15.20	$26.70	$36.65
Cost of mule labor	1.39	.43	.73	1.07	3.08
Equipment cost	.10	.03	.09	.14	.14
Building charge [a]	7.73	3.96	5.60	7.71	13.04
Salt	9.28	4.22	6.32	9.60	16.15
Borax	.43	.50	.57	.27	.40
Ice	3.10	1.22	1.08	3.11	6.40
Total cost	45.54	23.95	29.58	48.60	75.86
Cost per 100 pounds of live weight killed	0.54	0.87	0.54	0.59	0.46

[a] Cold storage and smokehouses.

Approximately half the total costs consist of man labor. It is the usual practice to pay with scraps of the cheaper cuts of meats, the extra labor needed for killing. It should be borne in mind that a considerable part of the labor charge is the cost of supervision by the farmer, and that the slaughtering is done in January, at times when there is not much pressure of other work.

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